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From Hazard to Habitat: Rethinking Environment and Health

The scale and complexity of ongoing changes in the world's environment are obliging epidemiologists to rethink the scope and priorities in environmental health. The inherently elastic word "environment" applies particularly to ambient external exposures that are predominantly involuntary and shared. The two important dimensions to the external environment are: (1) the local physico-chemical and microbiological environment; and (2) the ecological and geophysical infrastructure that sustains life-supporting environmental conditions.

Environmental exposures can be differentiated on another axis, occurring as either natural or human-made phenomena. Natural environmental influences include: seasonal and latitudinal variations in solar ultraviolet irradiation, extremes of weather, locally resident infectious agents, physical disasters, and local micronutrient deficiencies that reflect soil composition. For example, almost one-fifth of the world population lives on ancient, leached, and often mountainous soils where they are at consequent risk of dietary iodine deficiency.[1] Likewise, there are pockets of high-risk exposure to selenium deficiency in China (causing Keshan disease of the heart muscle in young adults and Kashin-Beck disease of bones and joints in older persons); and of soil-and-***water*** arsenic exposure (causing skin lesions, cardiovascular disorders, and cancers) in southwest Taiwan, the Obuasi region of Ghana, and West Bengal.[2,3]

The distinction between natural and human-made can be fuzzy. Gopalan, for example, describes several situations in India where natural environmental, nutritional health hazards have, in recent decades, been made unexpectedly better or worse by human intervention in the wider environment.[4] Those interventions have disturbed geochemical processes in soil and ***water***, causing altered human ingestion of certain metals and trace elements. Both pellagra (tryptophan deficiency) and lathyrism (exposure to neurotoxin in lathyrus seeds) were alleviated in the 1980s by basic, social/economic-driven changes in India's production and market price of alternative cereal grains. Wheat and, to a lesser extent, rice substantially displaced pulses and jowar. Meanwhile, goiter and intellectual stunting due to iodine deficiency and skeletal fluorosis both increased their geographic range--the former because both the spread of irrigation and expanded sugar-cane production depleted soil iodine levels; the latter because the use of dams and tubewells resulted in mineral disturbances within surface and subterranean drinking ***water*** composition, leading to increased fluoride content or increased bioactivity of ***water*** fluoride.

Our preeminent "environmental" concern as epidemiologists, however, has been with overt human-

made hazards in the ambient environment. In industrialized countries the focus has been on chemical ***contaminants*** entering the air, ***water***, soil, and food and various physical hazards such as ionizing and non-ionizing radiation, urban noise, and road trauma. In less developed countries, the persisting environmental concerns are with the microbiological quality of drinking ***water*** and food, the physical safety of housing and work, indoor air pollution, and hazardous local roadways. Environmental epidemiologists have thus mostly concentrated on estimating risks attributable to locally generated exposures that cause direct toxicity, injury, or infection, such as the relations between ionizing radiation and leukemia, blood lead concentration and child IQ, and tropospheric ozone levels and attacks of asthma.

Today we are beginning to embrace a broader view of "environment." This emerging shift in our conceptualization of the population-environment-health relation reflects a new awareness of the working of the "earth system" and its component ecosystems, and of how long-term population health depends upon the integrity of those systems.[5,6] The important recent insights include:

1. Recognition of the pervasive and cumulative consequences of many human-made toxic environmental ***contaminants*** that accumulate in the world's environment. Various persistent semi-volatile organic chemicals (such as PCBs, DDT, and toxaphene) undergo a type of global distillation that redistributes them from low latitudes to high latitudes, where they finally condense out from the atmosphere at heightened concentrations and enter the human food chain.[7] Certain organic chemical pollutants appear to have endocrine-disrupting effects in wildlife and perhaps in humans.[8] Others impair immune system functioning or impede intellectual development in children.[7]
2. Awareness of how worldwide mass urbanization is affecting environmental quality, social relations, consumer culture, microbial "traffic," and, therefore, human well being and health. In particular, we understand better the complex ecological influences upon infectious disease patterns.[9]
3. Awareness of the potential health impacts of global environmental changes. The best known are climate change and stratospheric ozone depletion. Other signs of planetary overload include a widespread loss of biodiversity,[10] an apparent recent plateauing in the productivity of our main terrestrial and marine food-producing ecosystems,[11,12] and regional depletion of freshwater.[13]

Historical Changes in our Perception of Environment and Health

Historians discern several distinct stages in western society's relationships to nature. During much of the 17th and 18th centuries, disease was deemed to arise from nature as God's Judgement on the human condition. The wages of sin were disease. Then, in the wake of the Enlightenment and the rise of more humane and egalitarian social ideologies in the early 19th century, the view emerged that populations were affected by their social and physical environment. There was much talk of miasmas (foul emanations arising from decay and putrefaction), especially within urban environments. After the crisis of urban-industrial blight and increased mortality in the 1830s in Britain, the Sanitary Idea emerged and became, temporarily, linked with ideas of urban sustainability including ideas of recycling sewage, maintaining fertile adjoining soils, attaining local self-sufficiency in food production, and achieving full employment. This new belief in the possibilities for enlightened collective action and for the general technocratic management of nature challenged the inherent selfishness of the laissez-faire ideology of the age.

From around mid-19th century, however, "environmental health" increasingly became an analytic form

of knowledge pursued by biomedical scientists. Statistics were collected on exposures, disease, and deaths, and public authorities were urged to engineer particular offending places to reduce the risks to health. The rise of bacteriology in the 1880s caused further divergence from the earlier ecological perspective. Microbes were deemed a ubiquitous cause of disease. This Germ Theory, along with the new theories of cell biology and of heredity, new concern over micronutrient deficiencies, and the medicalization of childbearing and child rearing, all refocused the health sciences on the individual. Ideas of shared environmental exposures and their risks to health receded.

In the latter third of the 20th century, we have become aware of pervasive forms of biologically damaging environmental ***contamination***. Rachel Carson radically changed our perceptions, contemplating a *Silent Spring* induced by ecologically damaging pesticides. Then we became aware of acid rain, and, later, of how cumulative exposures to various families of environmental ***contaminants*** could disrupt the workings of the immune system, the reproductive system, and the neurological system. These were harbingers of today's systems-oriented concerns about environmental change and population health.

We now see that humankind is causing various new and unprecedentedly large-scale environmental changes to the stratosphere, the troposphere, the forests, the soils, the oceans, and the world's biotic repertoire.[5] These changes reflect the impact of population increase and escalating levels of material consumption. This century, global economic activity has increased 20-fold and the human population has, in absolute terms, been growing faster than ever, achieving a remarkable fourfold increase from around 1.5 to 6 billion this century. Consideration of how global environmental change does, or in the future may, affect human health expands how we think about environmental influences on human population health. The world around us is much more than a repository of potential environmental hazards; it is also our habitat.

Potential Health Consequences of Global Environmental Change

Climate change provides an instructive example of how a global environmental change can influence health risks in populations around the world. The anticipated health effects of climate change encompass direct and indirect, immediate and delayed effects.[14] While some health outcomes in some populations would be beneficial (for example, some tropical regions may become too hot for mosquitoes or other disease vector organisms, or winter cold-snaps may become milder in temperate zones), the available evidence and reason, indicate that most health effects would be adverse. Long-term changes in background climatic conditions would alter the functioning of various biophysical and ecological systems that naturally stabilize and underpin human population health.

The anticipated direct effects include altered mortality and morbidity from a change in exposure to thermal extremes (for example, heat waves), the physical hazards of an altered pattern of storms, floods, and droughts, and, perhaps, the respiratory health consequences of increased exposures to photochemical pollutants and aeroallergens (spores, moulds, etc.).

Indirect health effects would include alterations in the range and intensity of vector-borne infectious diseases (for example, malaria, dengue fever, leishmaniasis, tick-borne encephalitis, and Lyme disease). Predictive mathematical modeling has shown that the geographic zone and seasonality of potential transmission of malaria, and of dengue fever, might increase in many parts of the world.[14,15] The increase of about 0.4°C in average world temperature since the 1970s, thought likely to be an early manifestation of anthropogenic climate change,[15] may have contributed to the ascent of malaria,

dengue fever, or their mosquito vectors to higher altitudes on all continents.[16]

Other indirect effects would include altered transmission of person-to-person infections (especially summer-season food-poisoning and ***water***-borne pathogens); the nutritional health consequences of regional declines in agricultural productivity in poorly resourced populations, especially in South Asia, northern Africa, and Central America; and the various physical, microbiological, and psychological health consequences of rising sea levels and population displacement.

In the 1950s, Renè Dubos indicated that technological innovation, whether industrial, agricultural, or medical, disrupted natural ecological balances and unleashed infectious diseases.[17] Subsequently, forest clearance has exposed rural populations in countries around the world to new infective organisms, such as the several hemorrhagic fever viruses now widely encountered in rural Latin America.[18] Continued over-fishing of oceans will reduce *per capita* supplies of seafood, unless the formidable ecological problems with aquaculture are overcome. Further production pressure on vulnerable agroecosystems will increase undernutrition in food-insecure regions, and will exacerbate rural-to-urban migration and the attendant health risks faced by slum dwellers. These sorts of problems have afflicted human societies before, but in localized and occasional fashion. Today they are becoming global and concurrent.[13]

The Global Phenomenon of "New and Resurging" Infectious Diseases

Infectious diseases receded in western countries throughout the latter 19th and most of the 20th centuries. The receding tide may have turned within the last quarter of this century, however. An unusually large number of new or newly discovered infectious diseases have been recorded in the past 25 years, including rotavirus, cryptosporidiosis, legionellosis, the Ebola virus, Lyme disease, hepatitis C, HIV/AIDS, Hantavirus pulmonary syndrome, *Escherichia coli* 0157, cholera 0139, toxic shock syndrome (staphylococcal), and others.[19,20]

This apparent increase in the spectrum and incidence of infectious diseases most probably reflects the rapid changes in human ecology and environmental impact in today's globalizing world.[9,21] Populations everywhere are becoming interconnected economically, culturally, and physically, enhancing the mixing of people, animals, and microbes from all geographical areas. Human mobility has escalated dramatically, in volume and speed, between and within countries. Long-distance trade facilitates the geographical redistribution of pests and pathogens, well illustrated in recent years by the HIV pandemic, the worldwide dispersal of rat-borne hantaviruses, the rapid dissemination of a new epidemic strain of bacterial meningitis along routes of travel and trade, and the cargo ship-borne introduction of the Asian tiger mosquito, *Aedes albopictus*, a vector for yellow fever and dengue, into South America, North America, Africa, and Europe.[20]

Climate change may foster the spread of cholera via the warming-induced proliferation of coastal and estuarine aquatic planktonic organisms within which the cholera vibrio naturally shelters and multiplies.[22] Environmental changes, in some settings, reduce the risks of infectious disease. For example, forest clearance for extension of agriculture in Southeast Asia has been associated with reductions in malaria transmission because of the destruction of the mosquito (*Anopheles dirus*) habitat, as also happened with *Anopheles darlingi* in South America.[23,24]

Rapid urbanization is expanding the traditional role of cities as gateways for infections; new vistas of

possibility are thus opened to otherwise marginal and obscure microbes. This facilitation may have been critical in the launching of the poorly transmissible HIV/AIDS virus in the 1980s.[20] Meanwhile, infectious disease patterns are increasingly being affected by the intensification of food production and processing methods, well illustrated by the meat-borne spread of *E. coli* 0157 and by the ongoing BSE/CJD episode in Britain.[25]

In the late 20th century the globalization of economic activities and culture, the escalation of travel and trade, and our increasing use of intensified food production and processing, other technologies, antibiotics, and various medical procedures are all reshaping the world of microbial relations. Pathogens live today in a world of changing, mostly increasing, opportunity.

Health as a "Sustainable State"

The prospect of global environmental change affecting human health into the future raises a radical question about the *sustainability* of population health. Conventionally, we measure population health cross-sectionally, in tally-card fashion, as an *achieved* entity. Those tally-card measures resemble our conventional assessment of society's economic performance: we measure the accrued wealth and achieved output, not the sustainability of economic activity.

To conclude that things must actually be getting better since life expectancies are increasing may be to misunderstand this sustainability dimension. In nature, gains in population size and life expectancy tend to happen when the immediate carrying capacity (supply) of the environment exceeds the number of dependent individuals (demand). Correspondingly, recent gains in human life expectancy indicate that, in an immediate sense, the life-supporting capacity of the human-modulated environment has been increasing. But at what cost, and at what future risk?

These gains in health and longevity over the past century have depended primarily on reductions in early-life deaths from infectious disease. Basic gains in food security and in sanitation, supplemented by advances in vaccination, antibiotic treatment, and oral rehydration therapy, have changed the profile of infectious disease mortality. These and other more recent life-lengthening technical and social improvements have been closely bound up with the processes of urbanization, industrialization, and increasing material wealth. They, and the resultant gains in life expectancy, have therefore proceeded in parallel with the increasing levels of depletion and ***contamination*** of our ambient environment. For how long can we maintain these parallel increasing trends in consumption, life expectancy, and environmental damage?

In the past, questions about "sustainable health" have only been asked when the limits of local environmental carrying capacity are reached. Such limits tend to be reached first in poor overcrowded populations where environmental infrastructure is consumed or degraded, where food supplies become inadequate, and where external support (via trade or aid) is lacking.[26] Now, the sustainability question is becoming more general. How can we assess the long-term sustainability of good health in large urban populations, particularly those with increasingly pervasive and damaging impacts upon local, regional, and global systems?

Indices of the sustainability of population health would focus, in particular, upon the integrity and productivity of the biosphere's life-supporting systems. Such indices would assess the extent to which current human health needs are being met by the sustainable consumption of natural resources. They would need to address dynamic processes, not static conditions. They would monitor selected

bioindicators known to be predictive of human disease risk, such as indices of vegetation and ground ***water*** in relation to infectious disease vectors (mosquitoes, tsetse flies, etc.), and indices of soil fertility and crop growth. Perhaps the experience of assessing the "health" of aquatic systems is instructive. Over recent decades, ***water*** quality has been conventionally assessed in terms of measured levels of each of a list of itemized toxic chemical and microbiological hazards. More recently, there has been a turning back to more integrative measures such as the "index of biological integrity."[27]

The pursuit of good population health makes little sense unless it is sustainable over future generations. This century's gains in life expectancy have derived, to some (as yet unquantified) extent, from increasingly intensive, often ecologically damaging modes of food production, from reliance on energy-intensive urban infrastructure and medical technology, and from overuse of antibiotics and chemical pesticides. Manifestations of this erosion of natural capital include the increasingly large proportion of the world's net primary (photosynthetic) product being co-opted by humans and the various global environmental changes that are now becoming manifest.[28]

Seeking Solutions

The apparent erosion of life-support systems at a global level is a serious public health issue. We are living in an important transitional period, in which we must reconceptualize the natural environment and humankind's relationship with it. In simpler times, not long past, we could generally rely on the continuation of nature's goods and services, and therefore could focus our concerns on the health hazards arising from man-made ***contamination*** of that external environment. Today, we also see that the provision of those goods and services is under threat,[29] and that the natural environment, as habitat, is becoming less able to support life.

Thus, at century's end, we are extending our environmental health concerns from hazard to habitat, from the idea of humans as targets of toxicants to one of humans fundamentally dependent on the sustained function of now-threatened nature. This view extends the scale of environmental health concern from risks to certain local groups or communities to risks to whole populations and their future generations. This thinking becomes particularly relevant today as we approach the post-genome age and must decide how best to apply our new, technologically dazzling, molecular genetic knowledge. Should we, as some agribusiness transnationals are urging, engage in a reductionist transgenic re-engineering of selected single species, manipulated without regard for their normal ecological context and for the possible knock-on consequences? Or should we find ways of using this new knowledge to work *with* nature to modulate, sustainably, the function of ecosystems? It is only the latter approach that is compatible with the idea of biosphere as "habitat."

The environmental health risk assessment task before us is formidable. The special incentive is this: If global environmental changes do, indeed, pose a substantive prospective risk to human health, knowledge of this will be an extremely important contribution to the policy-making process. Over the next few decades, humankind may well need to achieve more rapid social, economic, and political change than ever before. As Rudolf Virchow, the famous 19th century pathologists and public health advocate, might have said, this type of environmental health will be politics writ very large indeed.

Anthony J. McMichael
Department of Epidemiology and Population Health
London School of Hygiene and Tropical Medicine
Keppel Street

London WC1E 7HT, UK

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"Where you find a people who believe that man and nature are indivisible, and that survival and health are contingent upon an understanding of nature and her processes, these societies will be very different from ours, as will be their towns, cities and landscapes."
Ian McHarg

5.2 SITE

5.2.1 Site Selection

One of the most crucial aspects of sustainable design is selection of the site to be developed. The most energy-efficient and ecologically sensitive buildings could still become extremely damaging to the environment if developed on an inappropriate site.

The primary concern when selecting a site for development is the suitability of the site for that particular development. This general statement leads to an important question: what criteria will be used to judge the suitability of the site for sustainable development? It is these criteria that will be used to determine whether or not the development can be a sustainable fit for the site.

McHarg's, *Design with Nature*, demonstrates a process of intense site analysis to determine the best land uses for sites. Over the thirty years since McHarg's methodology was developed, this environmental site analysis process has become very influential in the field of ecological design. Through a series of overlays, each representing a certain natural and cultural aspect of the site (ie. vegetation, wildlife, geology, soils, historic value), McHarg developed a method of determining the most ecologically suitable land uses for specific sites.

The specific technical details and methodology of Mcharg's selection process do not need repeating in this thesis, but it is the essence of his theories which are important since they are central to a sustainable site selection criteria. Detailed analysis of the site and its region, covering both natural and cultural aspects, is essential to the sustainable site selection process. The factors that should be included when analyzing the site are discussed in the following pages.

þ *Cultural, historical, and archaeological features*
If any of these features exist, can they be preserved? protected? or re-used?

þ *Access to a potable water supply*
Where will the site obtain its water supply and is there enough? Ensure that this is compatible with the regional ecosystem's ability to recharge it's aquifer and not have a detrimental effect on the existing water supply for local vegetation and wildlife.

þ *Access to utilities and energy resources*
Look for opportunities to use the site's natural renewable resources, ie. solar, hydro, geothermal. Explore common utility corridors, to minimize disruption to the environment.

þ *Proximity and extent of transportation infrastructure*
Implementation of transportation infrastructure should be minimized, to the extent possible. Priority should be placed on reducing the need for automobiles.

þ *Undertake a detailed inventory of the site's natural features; soil, geology, topography, vegetation,*

and wildlife.
Tag any endangered or sensitive species and features for preservation and protection.

þ *Understand the local climate*
This will become an important consideration for many design issues, especially in architecture and landscaping (see chapters 5.2.2 and 5.3 for more detail).

þ *Regional factors around the site; character and functions of nearby urban communities*
What is the regional context of the site? The economic base of the region, the population, culture, and vernacular of the area, including neighboring communities is vital in design decisions.

"The process of site selection for sustainable developments is one of identifying, weighing, and balancing the attractiveness (natural and cultural environments, access) of a site against the costs inherent in its development (natural and cultural environments, access, hazards, energetics, operations)."(1)

Once all the data are gathered, the sustainable designer must decipher this information to determine if the site is suitable for development and, if so, design the most sustainable strategy for such a development.

5.2.2 Site Development

The basic premise of sustainable site development is the respect of the local environment and culture. By placing priority on the regional issues such as the site's natural features and ecology, the community will develop and/or preserve a distinct identity and sense of place.

The sterility of many of our urban environments today can be directly blamed on the disregard and ignorance of regional issues. The state of Florida for example, is plagued with multitudes of tacky, bland, sprawl developments. Suburbs in Tampa are identical to suburbs in Fort Lauderdale, which are identical to suburbs in Los Angeles. As James Kunstler best describes it:

" There is little sense of having arrived anywhere, because everyplace looks like noplace in particular."(2)

The lack of respect and consideration for a region's local cultural and natural features not only creates lifeless, zombie communities, but also promotes unsustainable development. On the other hand, site development with sustainable design principles preserves and promotes regional identity, culture, ecology, and creates a sense of place. A sustainable site development philosophy must incorporate the following principles:

þ *Base decisions on the site's environment and ecology.*
In order to do this effectively there must be a detailed environmental site analysis and inventory, as referred to in 5.1.1, and demonstrated by McHarg's theories.

þ *Recycle and restore previously disturbed areas when possible.*
Three obvious benefits of developing on previously disturbed lands include: the opportunity to restore the land, re-using and recycling previously disturbed land, and preservation of undisturbed land.

þ *Minimize impact on local environment.*
This is a mainstay of sustainable design theory which can be applicable to all components and at all scales. Living in a harmonious relationship with nature entails leaving "soft footprints."

þ *Respect the region's culture and history.*
Protect and restore significant buildings and structures of the region. This will help create a sense of place.

þ *Develop the infrastructure and the architecture with the natural features of the land.*
Rather than clear-cutting and bulldozing, the sustainable designer works in concert with nature, for example; by respecting the natural topography of the site, preserving the existing vegetation and taking advantage of the site's natural resources. Although not the standard practice, this ideology is actually much more economical in the long run.

þ *Preserve and/or restore the native vegetation and wildlife.*
Analogous to ripples in water, the preservation and restoration of existing life in the regional environment is extremely important to the health of the global ecology.

þ *Protect the site's other natural features such as water and soil.*
This is similar to the above principle. These natural features can also offer great economic opportunities if protected and managed correctly.

þ *Promote bio-diversity.*
This creates a healthier ecology both locally and globally.

"Protection of existing resources in the ecosystem is the fundamental purpose of sustainable design." (3)

þ *Site buildings to create outdoor spaces.*
Too often, designers view buildings as the architecture and forget that the architecture also includes the spaces created inside and between buildings.

"Thirty spokes share the wheel's hub; It is the center of the hole that makes the wheel useful. Shape clay into a vessel; It is the space within that makes it useful. Cut doors and windows for a room; It is the holes which make it useful. Therefore benefit comes from what is there; Usefulness from what is not there."(4)

Creating outdoor spaces promotes community, place-making, pedestrian friendly environments, reduces automobile usage, and brings residents closer to nature.

þ *Cluster development*
The clustering of buildings prevents sprawl, promotes community, preserves the landscape and offers greater opportunities for energy-efficient design.

þ *Provide solar access.*
Whenever possible, ensure that building lots are located to be able to take advantage of solar orientation to minimize energy use.

b. Maintain and improve on local environment
This is a principle or sustainable design theme which can be applicable to all components and in all scales. Living in a known area relationship with nature entails keeping "soft footprints."

b. Respect the region's culture and history
Protect and renew significant buildings and structures of the region. This will help to create a sense of place

b. Identify the prominent and characteristic trait of the natural beauty of the land
Rather than clear cutting and bulldozing, the sustainable designer works in concert with nature. For example, by respecting the natural topography of the site, preserving the existing vegetation and taking advantage of the site's natural resources. Although not the standard practice, this strategy is actually much more economical in the long run

b. Preserve and restore existing ecosystem vegetation and wildlife
Analogous to ripple in water, the preservation and restoration of existing life in the regional environment is extremely important to the health of the global ecology

b. Preserve the site's other natural features such as water and air
This is similar to the above principle. These natural features can also offer great economic opportunities if protected and managed correctly

b. Promote bio-diversity
This creates a healthier ecology both locally and globally.

"Protection of ecology economics to the extent that is the fundamental purpose of sustainable design."

b. Site building to create outdoor spaces
Into office designers view buildings as the enclosure and hope that the architecture also includes the spaces created inside and between buildings.

"Often people stare right through it. It is the entrance to the park that makes the park real. Shape only has meaning if it is the space inside that makes it useful. Columns and windows by a room. It is the holes where water is useful. The room through comes from what is there. The hollow from what is not there."

Creating outdoor spaces promotes community, place-making, pedestrian friendly environments, reduces automobile usage, and brings people's closer to nature

b. Foster development
The clustering of building promotes sprawl, promotes community, preserves the landscape and offers greater opportunities for energy-efficient design

b. Preserve solar access
To preserve possible passive solar building sites must be located to be able to take advantage of solar orientation to minimize energy use

þ *Minimize concrete paving and promote porous paving materials.*
Two thirds of the total land mass of Los Angeles is covered in concrete or asphalt paving (5). This is a typical statistic for most North American cities. As a result, we spend millions of dollars on stormwater drainage systems which mix rainwater with all sorts of toxins and flush them into our oceans, lakes, and rivers. Porous paving materials can greatly reduce this environmental hazard (see also chapters 5.6 Water and 5.7 Waste).

5.2.3 Landscaping

More often than not, landscaping of the site is subservient to the actual buildings that fill it. However, in the case of sustainable design, the integrity of the landscaping is just as important to a sustainable community as environmentally sensitive buildings are.

Trees function as one of earth's natural air conditioners, providing cooling shade and absorbing Carbon Dioxide, the primary culprit of the "Greenhouse Effect." Recent studies have shown that energy-efficient landscaping can save homeowners 30% on heating bills, 50% on cooling costs, and 80% in outdoor water consumption.(6)

In addition to the energy savings, sustainable landscaping also promotes biodiversity. One native oak provides a home to approximately 600 species of animals and insects (7). It also provides for a cleaner and healthier environment by improving air and water quality. Trees and plants absorb and filter smog while aquatic vegetation act in a similar filter fashion for water. Water conservation is also another benefit that can be achieved through sustainable landscaping (see 5.6 Water and 5.7 Waste).

Landscaping strategies for sustainable design are discussed below:

þ *Protect and promote the use of native plant species.*
This is essential for maintaining the health of the local ecology. Endangered plant species should be tagged and protected. Mature trees should be preserved when possible or at least moved and replanted.

þ *Non-native plants to be used only if they can co-exist with the local environment.*
If non-native plants are to be used, ensure that they will not upset the local ecology and that they are suitable to the local climate.

þ *Use the landscape to provide climate protection for buildings and outdoor spaces.*
Deciduous trees are ideal for providing cooling shade in the summer and allowing warming sunshine in, during the winter. Hedges, berms, and hills provide shelter from wind. Dunes act as storm impact absorbers. The natural features of each site offer opportunities for both protection and energy-efficiency.

þ *Utilize the site's existing contours for natural stormwater drainage.*
Natural drainage systems, used in conjunction with the use of porous paving materials can greatly improve the efficiency and sustainability of communities (see also chapter 5.6 Water, and chapter 5.7 Waste).

b. Minimize rainwater runoff and promote passive cooling strategies
Low albedo or flat solid land mass of Los Angeles is covered in concrete or asphalt paving [2]. This is a typical scenario for most North American cities. As a result, we spend millions of dollars each summer cooling buildings and pumping rainwater into rainwater with all sorts of toxins and flush them into our oceans, lakes, and rivers. Porous paving materials can greatly reduce this environmental impact (see also chapters 5.6 Water and 5.7 Water).

5.2.2 Landscaping

More often than not, landscaping of the site is subservient to the natural buildings that fill it. However in the case of sustainable design, the integrity of the landscaping is just as important to a sustainable community as environmentally sensitive buildings are.

Trees therefore is one of earth's natural air conditioners, providing cooling shade and absorbing Carbon Dioxide, the primary culprit of the "Greenhouse Effect." Recent studies have shown that energy-efficient landscaping can save homeowners 20% on heating bills, 30% on cooling costs, and 50% in outdoor water consumption.[3]

In addition to the energy savings, sustainable landscaping also promotes biodiversity. One native oak provides a home to approximately 600 species of animals and insects [2]. It also provides for a cleaner and healthier environment by improving air and water quality. Trees and plants absorb and filter away while aquatic vegetation acts as a similar filter system for water. Water conservation is also another benefit that can be achieved through sustainable landscaping (see 5.6 Water and 5.7 Water).

Landscaping strategies for sustainable design are the most basic:

a. Protect and promote the use of native plant species.
This is essential for maintaining the health of the local ecology. Endangered plant species should be mapped and protected. Mature trees should be preserved when possible or at least moved and replanted.

b. Conserve plants to be used only if they can co-exist with the local environment
If conservative plants are to be used, ensure that they will not upset the local ecology and that they are suitable to the local climate.

c. Use the landscape to provide climate protection for buildings and outdoor spaces
Deciduous trees are ideal for providing cooling shade in the summer and allowing warming sunshine in during the winter. Hedges, berms, and hills provide ideal shelter from wind. Trees act as storm water absorbers. The natural features of each site offer opportunities for both protection and energy-efficiency.

d. Utilize drought tolerant species for maximum conservation.
Natural drainage systems, used in conjunction with the use of porous paving materials can greatly improve the effectiveness and sustainability of communities (see also chapter 5.6 Water and chapter 5.7 Water).

þ *Use Xeriscaping or Water-efficient Landscaping to conserve water.*
There are many plants that can efficiently collect and distribute rainwater throughout a site. These should be considered in dry regions instead of wasting millions of gallons of water through sprinkler systems (see also chapter 5.6 Water).

þ *Promote the use of organic fertilizers through composting.*
This creates two benefits; it reduces solid waste while preventing the use of chemical fertilizers which pollute the environment (see also chapter 5.7 Waste).

þ *Use natural predators and other alternative solutions to control pests.*
Rather than spending enormous sums of money on pesticides to control pests and pollute the environment, introduce natural predators, and reduce or eliminate natural breeding grounds for pests.

5.2.4 Urban Agriculture

Closely related to Landscaping, Edible Landscaping or Urban Agriculture is a practice widely used in the past, and is still in common use in many urban areas around the globe. Urban agriculture is one of the most exciting concepts of sustainable development since it addresses almost all areas of sustainability. It promotes self-reliance, community, and local economy while reducing many environmentally harmful practices from modern farming practices.

Present monoculture farming practices use enormous amounts of chemical pesticides and fertilizers. The monoculture nature of modern farming destroys bio-diversity which is essential for ecological health. Annually, twenty four billion tons of topsoil and seventeen million hectares of trees are lost, worldwide due to intensive farming (8). Modern farming practices also require enormous amounts of fossil fuels.

"It now takes ten times as much energy to grow, ship, and process our food as the food itself contains."(9)

The concept of Urban Agriculture embraces one of the core issues of sustainability; that is, a small scale, regional production and consumption system. It can be done in individual backyards or in community plots. One of the greatest benefits provided is through economics, adding an annual 5% or greater increase for lower-income families.(10)

All sustainable communities should try to incorporate some form of urban agriculture into its design. Some strategies for urban agriculture include:

þ *Provide a plot of land within the community for urban agriculture.*
The land could be farmed by residents, thus promoting community. Another strategy would be the contracting of a farmer by the community to farm the land. The produce is returned to the community and/or sold abroad to provide revenue for the community.

þ *Allow for agriculture in residentially zoned districts.*
Urban agriculture is illegal in many residential districts due to local bylaws and ordinances. These prohibitions must be dropped to promote edible landscaping.

b. Use Xeriscaping or Water-efficient Landscaping techniques.
There are many plants that can efficiently collect and distribute rainwater throughout a site. These should be considered in dry regions instead of wasting millions of gallons of water through sprinkler systems. (see also chapter *5.6 Water*)

b. Consume the on-site organic production through composting.
This creates two benefits: it reduces solid waste while preventing the use of chemical fertilizers which pollute the environment (see also chapter *5.7 Waste*).

b. Use natural predators and other alternative solutions to control pests.
Rather than spending enormous sums of money on pesticides to control pests and pollute the environment, introduce natural predators and reduce or eliminate natural breeding grounds for pests.

5.4.4 Urban Agriculture

Closely related to Landscaping, Public Landscaping or Urban Agriculture is a practice widely used in the past, and is still in common use in many urban areas around the globe. Urban agriculture is one of the most exciting concepts of sustainable development since it addresses almost all areas of sustainability. It promotes self-reliance, community, and local economy while reducing many environmentally harmful practices from existing farming practices.

Present monocultures farming practices use enormous amounts of chemical pesticides and fertilizers. The monocultural nature of modern farming destroys bio-diversity, which is essential for ecological health. Annually, twenty to fifty billion tons of topsoil and seventeen million hectares of trees are lost worldwide due to intensive farming (8). Modern farming practices also require enormous amounts of fossil fuels

"It now takes ten fossil calories or more energy to grow, ship, and process one food calorie." (Wackernagel, 99)

The concept of Urban Agriculture embraces one of the core tenets of sustainability, that is, a small scale, regional production and consumption system. It can be done in individual backyards or in community plots. One of the greatest benefits provided is through composting, adding an annual 5% or greater increase for lower-income families (10).

All sustainable communities should try to incorporate some form of urban agriculture into its design. Some strategies for urban agriculture include:

b. Provide a plot of land within the community for urban agriculture.
The land could be planted by residents, thus promoting community. Another strategy would be the construction of a farmer by the community to farm the land. The produce is returned to the community and/or sold about to provide revenue for the community.

b. Allow for agriculture in residential communities.
Urban agriculture is illegal in many residential districts due to local bylaws and ordinances. These prohibitions must be dropped to promote edible landscaping.

þ *Explore the use of Bio-intensive Miniaturized Agriculture.*
Developed in Willits, CA, this method of agriculture is ideally suited for dense urban communities where space is scarce. Yields are two to six times greater than standard American agriculture while using 1/3 to 1/8 less water. These methods are currently in use in over 100 countries worldwide (11)

þ *Explore the use of Biodome Greenhouses.*
The Biodome Greenhouse is a geodesic greenhouse designed by the Windstar Foundation in Snowmass, CO. It occupies 1,750 square feet and can be assembled by one person. In a sixty day growing season, the Biodome produces 4,000 pounds of about thirty varieties of fruit and vegetables. Also included in the Biodome are fish tanks, utilizing filtered water from the fruits and vegetables. These tanks produce several hundred pounds of fish per year (12).

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(Simon and Schuster: New York NY, 1993) pp131.

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7. Andy Lipkis, "Urban Forests: the Lifeblood of an Eco-city,"
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(Rocky Mountain Institute: Snowmass CO, 1995) pp37.

10. Brenda Funches, "The Role of Urban Agriculture in Reclaiming the Urban Environment,"
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11. Michael Schafer, "Sustainable Agriculture in the Ecocity," The Urban Ecologist: Summer 1992

12. Ibid.

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Chapter 5.3 Architecture

Asphalt Plant Health Issues

Asphalt Fumes

Over a half-million workers are exposed to fumes from asphalt, a petroleum product used extensively in road paving, roofing, siding, and concrete work. When hot asphalt is applied in a molten state, it generates toxic fumes. Workers exposed to asphalt fumes are at risk of developing headaches, rashes, cough, and possibly cancer. There is no OSHA standard for asphalt fumes. OSHA is developing an action plan to reduce worker exposures to this hazard but is not initiating rulemaking at this time.

Hazard Description

NIOSH estimated that over 500,000 workers were potentially exposed to asphalt fumes (1). OSHA estimated in 1992 that over 300,000 construction workers were exposed primarily in road-paving and roofing operations (2). Exposures vary considerably between different types of asphalt work (i.e. roofing vs. paving) and the different worker jobs (i.e. kettle operator vs. paver operator.) More research needs to be performed to determine and control important factors which cause increased worker exposures (i.e. application temperatures, type of equipment used, environmental conditions, workplace practices, and asphalt constituents.)

The acute effects of exposure to asphalt fumes include headache, skin rash, fatigue, reduced appetite, throat and eye irritation, and cough. Asphalt paving workers, for example, have reported breathing problems, asthma, bronchitis, and skin irritation (6). A recent study has shown that some of these effects occur at exposures of 0.5 to 1.3 mg/m3 (3).

Human studies have reported lung, stomach, and skin cancers following chronic exposures to asphalt fumes. However, these studies have been inconclusive, and the possible chronic effects to workers following exposures to asphalt fumes are areas of continuing investigations. One recent summary analysis of the available human studies found a nearly twofold increase in risk of lung and stomach cancer among roofers. Increased risks were also noted for other asphalt workers for lung, stomach, and bladder cancer, and for leukemia (4).

Laboratory studies have shown chemical extracts of asphalt fumes to have cancer-causing and mutagenic properties. For example, painting of asphalt extracts on mouse skin produces tumors that increase with dose (7). Other laboratory studies show DNA changes in mouse lung and skin cells (8) and in human fetal cells exposed to asphalt fume extracts (9). Urinalysis of exposed workers shows mutations in laboratory tests (10).

Current Status

OSHA does not have a standard for asphalt fumes although it proposed a 5 mg/m3 permissible exposure limit (PEL) in 1992 (5). OSHA's quantitative risk assessment estimated a significant risk of lung cancer among exposed workers at levels as low as 0.2 mg/m3.

The American Conference of Governmental Industrial Hygienists (ACGIH) currently recommends a Threshold Limit Value (TLV) of 5 mg/m3 as an 8-hour time weighted average. In 1977, the National Institute for Occupational Safety and Health (NIOSH) recommended a 5 mg/m3 15 minute short-term exposure limit. NIOSH is developing a new Criteria Document for asphalt fumes and expects to

The International Agency for Research on Cancer (IARC) found:

- "There is sufficient evidence for the carcinogenicity of extracts of steam-refined bitumens, air-refined bitumens and pooled mixtures of steam- and air-refined bitumens in experimental animals."
- There is limited evidence for the carcinogenicity of undiluted steam-refined bitumens and for cracking-residue bitumens in experimental animals.
- There is inadequate evidence for the carcinogenicity of undiluted air-refined bitumens in experimental animals.
- There is inadequate evidence that bitumens alone are carcinogenic to humans."

Rationale

Asphalt fume exposure meets several of the criteria for designation as an OSHA priority. In particular, the known and potential health effects are serious and a large number of workers are potentially exposed, especially considering high industry turnover rates. Although the human studies of workplace cancer have limitations, there is considerable experimental evidence of cancer risk. There is also evidence of acute health effects among workers exposed to asphalt fumes.

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...eing Responsible and Responsive to the Public

Containing fugitive emissions from **asphalt plant** loading areas is becoming a major issue among grassroots community and health organizations. It is hotter than the boiling point of **asphalt** and becoming a national concern. In Boston, the U.S. Environmental Protection Agency is about to embark on a study to help determine exactly what the numbers are to help resolve a permit dilemma

The owner of a proposed 360,000-ton **plant** and the state environmental agency contend that a partially enclosed load-out area generates very little in the way of particulates and volatile organic compounds--about one ton per year. Opponents contend the real figure is more like 300 tons, making it a major source of air pollution. The difference lies primarily in computing the surface area of the **asphalt** exposed to the air. But the argument has been used successfully in North Carolina not only to stop a new **plant** but also to cause a moratorium on all **plant** activity until resolved. Unfortunately hot issues don't stand still. Some organizers are now thinking full enclosure of load-out areas may not go far enough. "Full enclosure of the total facility is where we really should be," says Lloyd R. **Fillion**, chairman, Boston-based Coalition Against the **Asphalt Plant**. Besides concerns over breathing vocs and having particulates end up in the water supply, he has been in plants where **asphalt** pipe elbows leak and where a solution sprayed into trucks to keep the **asphalt** from sticking flows out of the **plant**. More than anything he and others are driven by the fact that certain communities bear an unfair environmental burden in the name of progress.

"Roxbury is home to more hazardous waste sites than any other community in Massachusetts," says William A. Shutkin, executive director of a group opposed to the Boston **plant**. "It's no accident that in many industrial corridors you tend to see poor air quality. But people live and work there so why add to their burden." "We have the technology to do a whole host of things. The question is do we have the political will to spread the costs to all society rather than just burden the host community," says **Fillion**. Until the federal government can get a handle on the amount of emissions from load-out areas, new ...t construction may be adversely impacted. But then **Fillion** may have another solution. "Perhaps there should be no ...ore stationary plants. Make them mobile and bring them to the site so that no one community is burdened." It is good to note that the construction industry, including the National **Asphalt** Paving Association, is involved and is taking the issue seriously. That means being responsible and responsive to public health concerns.

The following information appears in a box on page 22 of the final report.

The Important and Synergistic Roles of Regulatory and Public Health Agencies in Identifying and Reducing Environmental Health Risks

The effort to sustain our gains in public health and environmental health protection will be most effective if regulatory and public health agencies work together. Regulatory and public health agencies have important and complementary roles to play in setting policies for environmental health protection and risk management. Yet, in general, these two communities do not interact sufficiently and the connections between environmental exposures and public health are not well established.

The likely synergy between environmental and public health agencies is a reservoir of untapped potential for environmental risk management. Many environmental pollution problems can be identified by their public health contexts. For example, construction of an asphalt batch plant was proposed in Boston. The residents of the urban community in which it was to be constructed were found by public health officials to have a relatively high incidence of asthma and cardiovascular disease. The public health findings signaled a potential environmental health problem that could have been exacerbated by emissions from the asphalt plant. On that basis, construction of the plant was opposed by citizens and by the public health agency, and a decision was made to try to locate the plant elsewhere.

Environmental, public health, and social agencies can work together with community activists to define problems and to develop and implement strategies to manage environmental risks in the full context of poverty, poor schools, and inadequate housing. As our society works to reduce risks in an era of diminishing resources, it is vital that environmental and public health agencies collaborate in deploying the tools of public health—epidemiology, exposure assessment, surveillance, nutrition, genetics, and behavior change—to identify and evaluate the most cost-effective ways to reduce risks and improve public health in all segments of the population. The public health community should accept the challenge to play an influential role in setting national, state, and local priorities and in developing strategies to understand, manage, and prevent environmental risk.

- Go to section in which this sidebar appears in printed publication.
- Go to report's Table of Contents.
- Go to Commission's homepage.
- Go to *RiskWorld*'s Departments Page.

Asphalt Plants

Based on analysis and research done by experts in asphalt plant air pollution, It has been recommend that a epidemiological study be undertaken by the so that we may better determine the health effects of human exposure to asphalt fumes.

Based on experience working with residents living near asphalt plants, it must conclude that the skin rashes, difficulty breathing, asthma, hypertension, and cancer clusters associated with living near these plants constitute a public health problem of unknown magnitude. It is hard to believe that all these problems are due solely to careless plant operators who lack concern for their neighbors. Rather, it is the responsibility of the agencies charged with protecting public health to take action to reduce known sources of illness.

General Comments

Asphalt cement additives, higher operating temperatures at small plants, and use of recycled asphalt paving cause increases in toxic emissions. These variables are not accounted for in the EPA emissions data which is used to permit asphalt plants. Further, the state persists in utilizing inappropriate smokestack models to predict ambient fugitive emission levels.

The asphalt paving industry has dozens of diluents and modifiers which are used to alter asphalt properties. These additives include plastic/rubber, rejuvenating oils, anti-stripping agents, extenders and anti-oxidants. . These additives change the volatility of the hot mix asphalt product. These substances are added in significant amounts: from one to several percent by weight of the asphalt. It is important to note that the recommended amount of additive exceeds the typical volatiles content. According to experts, these additives alter the vapor pressure of the asphalt by increasing the volatility of some of the lighter components which otherwise might not have volatilized in the temperature range of 275 to 375 degrees-F. EPA estimates of volatiles content are based on asphalt cement without additives and may bear little relation to the emissions from actual asphalt paving practices.

Another factor which increases asphalt fume emissions is operating temperature.
Emissions increase exponentially with temperature.
State highway departments specify minimum and a maximum temperature for HMA when delivered to the job site where the pavement is being installed, typically 275 to 325 degrees-F.
Obviously, the actual temperature of the asphalt loaded into a truck is higher. Such restrictions do not apply to HMA for non-state supervised jobs. Further, private contractors will demand a higher temperature at load-out since a smaller mass of HMA will cool faster in smaller trucks

When a plant switches from one hot mix formula to another emissions may increase. For example, a plant using recycled asphalt pavement (RAP) has a higher operating temperature to provide extra heat to evaporate water associated with RAP, since RAP is stored in the open. Switching to a formula without RAP, the plant load-out will emit a higher level of organics because of overheating. Examples of this exist in the data collected by the EPA at Plant C, a drum mix plant, where emissions increased by a factor of 2 to 3 over a 40 minute period. Episodes of high emissions caused by variations such as high temperatures are missed by the total reliance on averages of data collected under ideal test conditions.

Based on reports from residents in communities with operating asphalt plants, we believe that periods of high emissions are frequent. Further, the public health impacts of these emissions are more significant since asphalt plants in unzoned communities are located closer to residential areas and small operators,

are more likely to demand hotter asphalt.

These emissions data are significant in light of the levels of PM-10, carbon monoxide, and benzene emissions indicated by the permits.

Finally, the use of computerized screening models for toxic, ground level (fugitive) emissions remains troublesome because such dispersion models do not apply within the atmospheric boundary layer, a distance of 30 feet from the ground where frictional effects predominate (see Attachment B, Affidavit of Dr. R. Nadkarni). This means that the use of such models for fugitive emissions will predict more dispersion and lower pollutant levels than will actually occur. Acceptable ambient limits for toxics are designed to protect human health, but the use of the dispersion model in this case predicts the wrong ambient level. Other air dispersion studies, based on average factors from EPA's AP-42, show that ambient air quality standards are often exceeded for arsenic, cadmium and other heavy metals and for organic chemicals such as benzene and formaldehyde.

With almost 2,000 dangerous chemicals in asphalt fume which was developed solely for smokestack emissions, not boundary layer fugitive emissions. Because of the inappropriate use of screen models for fugitive emissions, we have little confidence in the draft permit's ability to protect public health at a site.

Specific Comments

1) The permit will not control odorous emissions

Under Specific Conditions and Limitations, the draft permit states,

> Control and Prohibition of Odorous Emissions, the Permittee shall not cause, allow, or permit any source to be operated without employing suitable measures for the control of nuisance odors.

State law prohibits operation of a plant without suitable measures to control odorous emissions. " However, no specific measures for the control of odor are listed. Someone might respond to a plant neighbor's complaint about odor would have no means of enforcing this regulation. This is an omission which must be corrected before any air permit is issued.

2) Air pollution is underestimated

The officially exempted sources include:
1) a fuel oil fired asphalt tank heater
2) gallon fuel oil storage tanks .
The attachment acknowledges that the asphalt tank heater and the storage tanks are sources of toxic air pollutants.

Omitted from the permit exemption list are:
1) mobile sources of diesel exhaust,
2) material handling and road dust, and
3) fugitive emissions from loaded trucks prior to departure to the job site.

A recent EPA report lists all the above sources with corresponding emissions of criteria pollutants and hazardous air pollutants.

The omission of so many known air pollution sources from the permit should be corrected. The true total of toxic air emissions should be included in the determination of whether the plant meets the required ceptable ambient limits.

Public Health

The problem with noise when an asphalt is combined with a gravel aggregate that it negatively affects human health and well-being. Problems related to noise include hearing loss, stress, high blood pressure, sleep loss, distraction and lost productivity, and a general reduction in the quality of life. While I can find no applicable state statute or rule which applies to aggregate plant noise, the close proximity to residential areas which these plant would operate requires an assessment of noise impact on plant neighbors. Chronic exposure to noise, may have a chronic affect on the community over a long-term period."

If the state proposes to issue a permit for a plant which would create noise levels high enough to damage public health, it must take steps to ensure that the residents are protected. It would be an inadequate response to pass this off because noise is not a chemical compound. Levels should specified by some local ordinances and the EPA.

Individual states do not expect local governments to adopt toxic air pollution rules; neither should the state expect them to control noise pollution from industrial plants permitted by the state.

Washington University in St.Louis

Feature Service

Road dust: Rural vehicles emit more pollutants than urban ones

by Tony Fitzpatrick

Contact:
Washington University in St. Louis
Tony Fitzpatrick
(314) 935-5272
tony_fitzpatrick@aismail.wustl.edu

On top of looming tougher pollution rules for SUVs and other popular vehicles, an environmental engineer at Washington University in St. Louis now has devised a new measurement that could make both **car** owners and manufacturers nervous.

It's called ppvm (pollutant per vehicle mile). It is a measurement of the total particulate matter **emissions** a vehicle makes per mile traveled. While ppvm won't appeal to the auto owner the way that mpg, rpm or mph do, it's likely to have a future impact on air pollution measures and standards nationwide.

Jay R. Turner, D.Sc., assistant professor of chemical engineering and civil engineering at Washington University and director of the university's Air Quality Laboratory, has performed an ambitious study of vehicular **emissions** in the St. Louis region. Emission measurements were taken for particles smaller than 2.5 micrometers in diameter, which is the size range for a standard issued by the U.S. Environmental Protection Agency (EPA) in 1997. Results from an urban interstate site and a nearby rural Illinois site that Turner surveyed indicate that an average urban vehicle, whether a motorcycle or **diesel truck**, emits between 30 to 40 milligrams of particulate matter per mile traveled; an average rural vehicle emits between 200 to 300 milligrams ppvm traveled.

So much for fresh country air.

"We think there is much more heavy **diesel** traffic outside the city and there are greater road dust **emissions** in rural areas because of the proximity to open land, and those account for higher rural readings," Turner explains.

Road dust is more than the simple dirt a vehicle stirs up as it moves along the road. Besides dirt from soil, road dust also contains the suspended fine particulate matter created from tail pipe **emissions**. It is a major significant component of vehicular air pollution that the medical profession and the EPA are paying strict attention to these days. Upper respiratory illnesses, cardiovascular diseases, such as arrhythmia, and cancer increasingly are being linked to road dust and other vehicular particulate matter. The acidity of the matter, its heavy metal composition and the sheer volume of minuscule particles suspended in the air all make your automobile particulate matter air pollution a potential public health threat.

Turner and his students used particulate matter samplers that pull air through filters; they measured the mass of the filters before and after the sampling. They concentrated on Interstate 40, which runs through the heart of St. Louis, and Interstate 55 in Madison County, Illinois, approximately 30 miles northeast of St. Louis. Periodically, from January to April 1998, the team painstakingly counted and classified vehicles at both sites over six- to eight-hour time spans, taking five-minute readings every 15 minutes while they collected the particulate matter samples. They determined that the rural site averaged about 1,300 vehicles per hour; the urban varied widely from 7,500 to 10,000 vehicles per hour.

"The numbers indicate that a single vehicle stirs up a considerable amount of particulate matter, more so than what people might think," says Turner. "When you then consider that you can multiply this daily value by the many thousands of miles vehicles travel on the roads each day, you get a clearer view of what role the automobile potentially plays in air pollution."

Turner's results were published in a fall 1999 issue of the *Journal of Air and Waste Management Association*. The U.S. EPA funded part of the study. The data he has collected plus his analysis of U.S. EPA mathematical models that predict air particulate matter emission rates will help environmental agencies and municipalities better sample their roads and address their particulate matter air quality challenges.

It's more than your car's tail pipe that contributes to vehicular air pollution.

"**Emissions** come from the tail pipe, from brake wear, tire wear and suspended dust from along the roads," says Turner. "Our research tends to focus on diffuse **emissions**, those that are difficult to characterize because they don't come from a single point, say, the tail pipe. What we essentially do is look at the net sum of **emissions** coming from vehicles and **compare** them to the EPA model that estimates the individual components and we add

them up to see if the real world data conform to what the models predict."

Faulty program

Turner found a discrepancy in the EPA model, or its application, regarding road dust. The model uses a default value -- a theoretical generic number -- to account for the amount of road dust particulate matter on roadways because it is not always possible to measure the actual amount of suspendable dirt on the road. These measurements are done by sweeping. But to get an absolutely perfect measurement of roadside dust, the study area has to be swept clean with high-performance vacuums. This is next to impossible to do with interstate highways because of the large traffic flow.

"We consistently found that the EPA models with generic input parameters over-predicted the **emissions** we found in the field, and that the one input the models are most sensitive to is the amount of suspendable road dust on the roadway," Turner says. "This forces a re-thinking of how to use the EPA models or how to make them better."

The EPA issued a new standard for particulate matter **emissions** in 1997, and many areas of the country will likely violate those standards. Thus, these communities will need to do particulate matter inventories to set goals for reducing **emissions**.

"We are telling state and local agencies that they have to find a way to get locally generated data for certain critical inputs to the models, much as we did, and if they have to rely on default values in the models, they may well be subject to large uncertainties in their estimates," he says. "If you construct a faulty program, you won÷t have the best solution."

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Minority Report on Fugitive Emissions from Asphalt Plants

Lloyd Fillion, Citizens Against the Asphalt Plant, Boston MA

Ravi Nadkarni, Wrentham Environmental Coalition, Wrentham MA

Henry W. Nowick, Nowick Environmental Associates, Springfield MA

Hyla Napadensky, Napadensky Energetics, Lutsen MN

Lou Zeller, Blue Ridge Environmental Defense League, Glendale Springs, NC

Janet Zeller, Blue Ridge Environmental Defense League, Glendale Springs, NC

Jeff Gearhart, Ecology Center, Ann Arbor MI

Senator Stephen Lynch, Massachusetts Senate, Boston MA

Minority Report on Fugitive Emissions from Asphalt Plants

Executive Summary

In the mid 1990's, the US EPA, in consultation with stakeholders from industry, and citizens from a number of communities, developed a test protocol to quantify certain emissions from bituminous concrete, or "hot mix" asphalt, plants. Of concern were the heretofore unmeasured emissions from the loadout area of these facilities - the point where the manufactured product is dropped into the trucks which deliver the product to the job site. These emissions had been qualitatively described as "fugitive" which encouraged state permitting agencies to ignore their existence. Tests were conducted at two facilities, one a recent plant of continuous feed drum design, the other an older plant of batch feed design. Citizens and/or their technical consultants were involved in developing the test protocols and were present for both tests.

Hot mix emissions from asphalt plants are of concern as frequently these plants are immediate neighbors to residences and/or schools or parks, particularly in urban areas. These facilities can operate around the clock when fulfilling contracts, potentially exposing those living in proximity to levels of emissions greater than workers operating on 8 hour shifts. Health studies of asphalt workers suggest elevated levels of certain cancers with exposure to emissions from the product.

The US EPA intended to conduct testing that would produce accurate data regarding loadout emissions. However, certain errors in test design and in data interpretation or manipulation compromise the accuracy of the resultant emission factors derived from these tests. The problems include a) the methodology for capturing the subject "fugitive" emissions, which methodology ultimately failed to encapsulate and/or measure the entirety of those emissions, b) inaccurate accounting for background pollutants, and c) failure to consider the impact of maximum manufacturing temperature and maximum volatile content of the liquid asphalt.

Additionally, while the citizens involved were promised full access to the tests as well as full photographic documentation to be provided by the US EPA, these commitments were not kept. Further, the staff of the US EPA, Research Triangle Park office demonstrated a difficulty in according citizens the same level of professional respect as was accorded industry representatives.

The citizens recommend that the EPA conduct an epidemiological study of the impact of asphalt fume to better understand the relationship to numerous health problems experienced by citizens living in close proximity to asphalt plants. We further urge that the emissions factors reported from this test be qualified so that permitting agencies and citizens alike quickly understand the limitations of the factors. Finally, the EPA's offices at Research Triangle Park should undertake efforts to emulate the ability of some of that agency's regional offices to work with citizen activists and their science consultants, and the agency should review the limitations that industry places on access to information which is not proprietary.

Introduction

In the mid-1990s, several groups of citizens and environmental organizations began petitioning the US EPA to quantify so-called "fugitive" emissions from bituminous concrete, or asphalt hot mix, plants. These requests were based on observations and subsequent theoretical analysis suggesting that such emissions could be significantly greater in their volume and concomitant impact on the local environment than the word "fugitive" implied. In late 1996, the EPA decided to move forward with its own testing after the asphalt industry failed to conduct their own testing in an open manner as they had promised the EPA, producing a test report[1] which was heavily criticized by academic and research scientists, public health officers, citizens, environmental activists and even from within the EPA itself. The citizen or public representatives who participated in this program ultimately included staff from public health departments in Chelsea, Massachusetts and Boston, Massachusetts, engineering/science consultants from several diverse disciplines including chemists, environmental, chemical and mechanical engineers, environmental organizations from Massachusetts, Connecticut, North Carolina and Michigan, and citizen activists from those states and from Minnesota, New York and Virginia. Additionally the Massachusetts Department of Public Health and one Massachusetts State Senator with experience in construction provided comments.

The EPA committed to providing an opportunity for citizens, along with industry and other stakeholders, i.e., other government agencies, to help frame the test protocols. This opportunity was provided through a series of conference calls and day long meetings and written communications. The interaction was hosted and coordinated by the EPA's New England Regional office, and continued through the testing, compilation of test data, analysis and production of reports. The commitment of the EPA was laudable; however, the several year long interactions were adversarial at best, with hostility or distrust between the multi-state citizen group with its technical consultants and the technical staff from EPA's Research Triangle Park (EPA-RTP). The barely contained rancor resulted in most of the conference calls and meetings being conducted with mediators from the EPA's New England Regional Alternative Dispute Resolution Program.

At the point of testing, the EPA provided opportunity (travel and lodging) for only one citizen technical advisor from the East Coast cluster of public commenters to witness the primary test which took place in California at a drum style facility, the same facility that had been previously

selected by industry, code labeled by the EPA as "Plant C." At a secondary test in Massachusetts, at a batch style facility labeled "Plant D," three citizens were on site for the three days of testing. The primary test observer was severely handicapped because of an inability to be at more than one place simultaneously, a prohibition on citizen photography coupled with the EPA's reluctance and even refusal to take requested photographs as had been promised the citizens, and the exclusion of the citizen from certain meetings which occurred between plant personnel and EPA officers with their testing consultants who were responsible for the test. It is against this less-than-open venture in cooperation that the test and subsequent data are to be viewed.

Why are many citizen groups concerned about asphalt plants?

Hot Mix Asphalt plants (HMA plants) and asphalt terminals have numerous characteristics that result in a large number of the general public being exposed to their hydrocarbon and particulate emissions. This is in contrast to the general experience where workers in industrial plants are frequently exposed to higher concentrations of pollutants for longer durations than the people who live near the plant. In the case of asphalt plants, this generalization is not correct because such plants, of which there are about 3,600 within the US, are often located in urban areas close to homes, schools and playgrounds with minimal setbacks. Further, the plants operate around the clock when fulfilling certain types of contracts so that while the workers might be exposed only eight hours per day, the neighbors breathe in the fumes day and night. While the operation of an asphalt plant might be seasonal, particularly in northern latitudes, the intensity of exposure during the peak production months is quite acute.

Anecdotal information collected by Boston Health Commission's Office of Environmental Health and by others shows that some individuals exposed to asphalt plant emissions have the same or similar symptoms: asthma, nausea, headaches, skin rash, etc. This information is not sufficient to indicate whether these physiological reactions were a result of hypersensitivity and allergies or whether this was a reaction of non-allergic people to levels of hydrocarbon and fine particulates high enough to elicit a response. Available epidemiological studies have shown statistically significant links between exposure to hydrocarbons and/or metal fume and childhood leukemia[2] and between exposure to asphalt fume and a variety of cancers. Dr. Eva Hansen[3] measured excess cancers in asphalt workers in Scandinavia. These included cancers of the mouth, esophagus, lung, and rectum. Dr. Hansen also found increases in non-pulmonary cancer, liver cirrhosis, bronchitis, emphysema and asthma in asphalt workers.

As a part of the interaction with the EPA, the multi-state citizen coalition held a conference call with EPA-RTP to discuss health effects of asphalt fume and to see if they could regulate emissions from HMA plants so that the exposure of the general population would be reduced. These discussions were unsatisfactory. EPA-RTP has acknowledged that their limited resources permit the consideration of only about 50 chemicals annually, out of a field of 50,000 chemicals not yet tested. Asphalt fume, a complex emission, is comprised of over 2,000 individual chemicals. Since EPA's current approach is based on considering each chemical by itself, knowledge about the health effects of each individual chemical will not be available for many decades. Further, even after this data has been compiled, the synergistic interactions between these chemicals in a complex mixture will not be available and would require further study. EPA-RTP suggested that the citizens undertake an epidemiological study to establish a statistical link between exposure to asphalt emissions and health effects. EPA would not act to curb these emissions in the absence of such a study. For environmental pollutants like asphalt fume, neither

exposure nor toxicity are acute enough to cause immediate death. The physiological response might take time (for example, cancer often takes several decades to develop even with exposure to known carcinogens like tobacco smoke) or the irritants will produce a variety of negative health responses in a general population which, while significant in terms of loss of productivity and "life, liberty and pursuit of happiness", don't cause immediate death but still have an effect on mortality and morbidity. To track asphalt plant neighbors on a national basis over a long period of time is a massive job that is totally outside the ability and resources of any citizen group[4].

The current work is the culmination of an almost 6-year effort to quantify fugitive emissions from HMA production/handling. On the one hand, EPA agreed to measure these emissions by collecting and analyzing data from two plants, labeled Plant C, a large drum plant and Plant D, a batch plant. For this we are grateful. On the other hand, the work has certain shortcomings and this Minority Report presents a discussion of these issues which have not been resolved to our satisfaction. Given the contentious and contradictory nature of the latest document "RESPONSE TO COMMENT ON DRAFT EMISSIONS ASSESSMENT REPORT, AP-42 SECTION AND AP-42 BACKGROUND REPORT"[5], a point by point rebuttal has not been attempted; instead a few select examples are presented to illustrate that these differences continue due to lack of valid response from EPA. The discussion focuses on the major questions that this work was expected to answer which unfortunately have not been answered.

It should be noted that there is a difference between the EPA and the citizens in the way they respectively approach the issue of asphalt fume emissions. The citizens approach the issue from a public health perspective. Thus their concern is with both average exposures for long term effects and also with peak, short-term exposures for acute effects; particularly since much of the anecdotal information deals with the latter. The EPA's approach, as stated in the latest response is to collect data to primarily enable the estimation of emission inventories and for air quality planning, although EPA acknowledges that the information could be used in other contexts, for example, in applications to State authorities to build new plants. EPA's published data on emission factors is not just an average number for all plants when data from individual plants varies by orders of magnitude, as much of this data is collected under ideal operating conditions. For example, much of the data used for developing stack emission factors was collected just after initial plant startup often during a preoperating test period where the plant owner is demonstrating to the state regulatory authorities that the plant can operate for short periods of time at the design operating rate while staying within the permitted emission limits. In these situations, it is not unusual to have engineers from the equipment suppliers standing by to adjust and tune the equipment (as was the case at Plant C for EPA's test) to make sure that the equipment is operating optimally. Once the test is successfully completed, these engineers depart and the on-going emissions are dependent on the skills of the plant operators and their internal maintenance staff.

Of equal importance, and most critically, citizens and public health officers are inclined to consider worst case scenarios while the EPA almost consistently opted to publish data that reflects the best case scenario. Additionally, these numbers don't show measures of variability despite our request. Such measures are buried in the appendices.

Recently, the EPA has been criticized for the lack of science to back up their decision-making[6]. Specifically, National Research Council mentioned "weak scientific performance" and "weak scientific credibility". The problems uncovered by citizen reviewers in this case indicate that the

current project also suffers from similar shortcomings.

Unresolved Issues

Rather than repeat the arguments, pro and con, under each topic, the highlights of the positions of the two sides will be presented in this discussion of unresolved issues with emphasis on issues that concern the citizens. Additional details, particularly of the EPA position, are in the most recent document. Specific references are provided to the Section number in this "Response to Comments" report.

1. **The issue of volatile content and operating temperature**

If asphalt did not contain a volatile fraction, there would not be any emissions of hazardous organic chemicals from hot asphalt. Unfortunately, all asphalts contain a volatile fraction which evaporates at the operating temperature of between 275° and 375° F. Further, the emissions increase exponentially as temperature increases. The issues here are as follows:

a) Why did the industry change the specification for the maximum allowable volatile content of asphalt from 0.5% to 1.0%? What are the implications of this change?
b) How is this volatile content measured now and how was it measured in the past?
c) How is the volatile content affected by seasonal variations in oil refining practice?
d) How is the volatile content affected by the various classes of additives that are sold to improve the performance of asphalt?
e) Are the maximum operating temperatures recommended by industry groups actually followed by plant operators? If not, what are the variations in temperature and what is the consequence of these variations?

The above issues are repeated below as captions for the discussion to follow which delineates the differing positions of the citizens and EPA in bold letters:

a) Why did the industry change the specification for the maximum allowable volatile content of asphalt from 0.5% to 1.0%? What are the implications of this change?

Traditional grades of asphalt use "proxy" properties such as viscosity at 140° F for specifying and differentiating between grades of asphalt. Under such specifications, the volatile content is a "not to exceed" value, typically 0.5% for the most common grade of asphalt AC-20. Certain users might allow a relaxation of these specifications. For example, in Massachusetts, the Mass Highway Department will allow their engineer in the field to relax the requirement for Loss on Heating from 0.5% to 1.0%. One of the problems with this type of specification is that the volatiles content of different batches of asphalt meeting the same viscosity specification will vary dramatically. For example, an article published by industry researchers[7] shows that the volatiles content of two different batches of AC-20 varied from 0.053% to 0.5%, a variation of one order

of magnitude. This means that the emissions of asphalt fume would have also varied by an order of magnitude. Second, the "not to exceed" value for volatiles content is "based on original asphalt", i.e., before any blending. In other words, these specifications apply to the material that is shipped from a refinery, not necessarily to material that is shipped from a terminal to a hot mix plant. At a terminal, the terminal operator will add various diluents for altering viscosity. The potential effect of these diluents is discussed later in section d.

The old system of viscosity specification is being replaced by a new specification called "Superpave"which is based on measuring the properties of hot mix under simulated service conditions. This standard was jointly developed in concurrence with many parties including the government. However, the newer Superpave specification increases the permissible volatiles content to "not to exceed 1.0%".

Our concern is that the specification was changed by industry in order to make it easy and feasible for the industry to meet it under widely varying production conditions; otherwise, it would have remained at 0.5%. This means that the emissions from certain plants at certain times of the year, will be quite a bit higher than what is now shown in these reports. This increase is quantified in Table 1 later in this report. EPA's position is that this change is not relevant, and that anyone can use the volatility value they want in the equations presented. EPA also believes that the average volatility content of asphalts is less than 0.5% based on a set of samples analyzed in 1993 as a part of the SHRP program. (3.2.2) We strongly disagree that the range of volatility values measured in the SHRP program in 1993 is the relevant range for asphalts in use today after blending. Further, EPA arrives at conclusions about volatility of asphalts used around the country based on the SHRP data. This extrapolation would be correct only if equal quantities of each of the various asphalts in the database were sold each year in the US. There is absolutely no information to support that key assumption.

b) *How is this volatile content measured now and how was it measured in the past?*

The volatiles content of asphalt has traditionally been measured by the Thin Film Oven Test (TFOT), but the industry is moving to a slightly different test, the Rolling Thin Film Oven Test (RTFOT). We understand that a major reason for this change is because the results of the Rolling Thin Film Oven Test are more predictable, i.e., the method produces results with less systematic and random error.

There are two problems with either of these tests. First, both tests measure loss in weight on heating, which is not the same as measuring the volatiles content, particularly since some asphalt samples will gain weight as a result a pickup of oxygen and nitrogen. Nevertheless, because these tests are performed routinely, it is the only available data source for estimating the volatile content of original

asphalt. Second, the loss of weight number obtained from the Thin Film Oven Test is lower than the loss of weight measured by the Rolling Thin Film Oven Test. However, the limited data, published by PES in the Plant C test report Appendix B.8, indicates that this difference is 0.16% at 325° F. (For example, if the TFOT measured loss of weight as 0.3% and RTFOT measured the loss of weight as 0.46%, the difference would be 0.16%). When this difference was measured at two other temperatures, it was found to be less than 0.1%.

Thus, EPA's other explanation (3.2.2) that the volatiles specification was increased from 0.5% to 1% because of a change in the testing procedure from the Thin Film Oven Test to the Rolling Thin Film Oven Test is not supported by data. The citizens don't agree that a change of less than 0.16% should cause a relaxation of the specification by 0.5%, a value three times the measured change.

c) *How is the volatile content affected by seasonal variations in oil refining practice?*

Refinery operations change seasonally. For example, summer runs are designed to maximize gasoline production while winter runs decrease gasoline production and maximize fuel oil production. Seasonal variations in refining operations should affect the volatiles content of asphalt.

The citizens are concerned that no data is available on this subject. Similar concerns were raised by the Mass Department of Public Health. Such data might provide further insight why the specification was changed and might provide a better understanding of exposure suffered by neighbors of such plants.

d) *How is the volatile content affected by the various classes of additives that are sold to improve the performance of asphalt?*

In recent years, the industry has produced dozens of proprietary diluents and modifiers for the purpose of blending and for improving asphalt properties. These additives fall into different modifier families including the following: fibers, fillers, plastic/rubber, rejuvenating oils, antistripping agents, extenders and antioxidants. A partial list includes hydrolene (Sun Chemicals), Kraton polymers (Shell Chemicals), Elvaloy (Du Pont) and so on. The fibers and fillers are not expected to change the volatility but all others, which interact chemically with asphalt constituents, should alter the volatility of the asphalt, based on engineering principles. These substances are added in significant amounts: one or several percent by weight of the asphalt. In other words, the recommended amount of additive exceeds the percentage of the volatile component. Not only are these additives light compounds, but they can also alter the vapor pressure of the asphalt by increasing the volatility of some of the lighter components which otherwise might not have volatilized in the temperature range of 275 to 375° F.

The citizens are concerned that the measurement of loss of heating of the original asphalt can bear little relation to the emissions from the asphalt that is actually used to prepare a hot mix. EPA's position is that this is not a significant issue. The two tests at Plant C and Plant D did not use any additives so there is no available data.

e) *Are the maximum operating temperatures recommended by industry groups actually followed by plant operators? If not, what are the variations in temperature and what is the consequence of these variations?*

The second factor that increases asphalt fume emissions is operating temperature. As such, emissions increase exponentially with temperature. State Highway Departments will specify a minimum and a maximum temperature for HMA when delivered to the job site where the pavement is being installed. In Massachusetts, this range is 275° to 325° F. Note that the actual temperature of the asphalt leaving the plant and being loaded into a truck is higher. The temperature has to be higher in order to compensate for cooling during transportation to the job site and this issue becomes critical when delivering to a distant job site. Also, note that there is no such restriction when delivering HMA for non-state supervised jobs. Also, according to an engineer who was the general manager of an asphalt plant and a plant designer internationally, who attended many of the planning meetings, many small private contractors who drive small trucks will demand a higher temperature at loadout since a smaller mass of HMA will cool faster.

There are also other factors that will increase emissions. For example, when a plant switches from one HMA mix formula to another, emissions will increase. The best example of this is when a plant making hot mix with Recycled Asphalt Pavement (RAP) switches to a formula without RAP. In the first instance, the plant would have operated at a higher temperature to provide the extra heat to evaporate the water associated with RAP since the RAP is stored in the open and not dried. When the change occurs to a formulation without RAP, the plant loadout will emit a higher level of organics because of overheating. This is a frequent problem at batch plants though this type of problem is not restricted to only batch plants. (Examples of this type of excursion exist in the data collected at Plant C, a drum mix plant where emissions increased by a factor of two to three over a 40 minute period[8].) This again means that the episodes of high emissions caused by variations such as high temperatures are missed by the total reliance on averages of data collected under ideal conditions, even though the high emissions on the day of the test did affect the average.

The citizens, based on personal observations, believe that such periods of high emissions are frequent, especially at batch plants. Further, the public health impacts of these emissions are more significant since batch plants are more numerous than drum plants, located closer to homes and service the small independents who are more likely to demand hotter asphalt. The Table below,

Table 1, is based on equations published by EPA relating volatiles content and production temperature to various emissions. (Please refer to the Emissions Assessment Report[9], Table 1 on page 6 and Table 11.1-14 on page 11.1-31 in appendix A.) Table 1 on page of this report shows the differences between EPA's numbers and ours on the basis of assuming 1% volatile content and an operating/loadout temperature of 375° F.

It can be seen that the emissions calculated by using EPA-derived equations, particularly emissions of noxious organic compounds, increase by more than 600% under conditions of higher operating temperature and volatility content. Both the EPA and the Citizen numbers would be increased by another 20 to 40% to compensate for the low bias introduced by the "background correction" and "Method 204", discussed later in this report. Finally, it should be noted that although the numbers in Table 1 are shown on an annual basis to help compare them to Table 1 in the Executive Summary of the Emission Assessment Report, the citizens are aware that actual annual emissions will be lower since a plant will not always operate with an asphalt with a high volatiles content at high temperatures. On the other hand, the table clearly shows the type of variation in emissions that is likely to occur under such conditions with its effects on nearby residents.

2. Issues relating to how the data was collected and analyzed

This process of planning, data collection and analysis has involved many discussions, agreements and disagreements.

The citizens are concerned that with time, EPA's responses have become more rigid, inconsistent and not based on data (or the lack thereof) in the reports. Only a few of the key issues are mentioned below. Others are found in the previous comments by the citizens to various draft reports by EPA,[10].

Table 1: Effect of Different Volatile Contents and Operating Temperatures on emissions

	<Batch plant data>		<Drum plant data>	
	EPAa	Citizens[b]	EPA[c]	Citizens[d]
Loadout emissions[e]				
- Total Particulate Matter	52	257	104	515
- Organic Particulate Matter	34	239	68	478
- Total Organic Compounds (Method 25A)		416	2,918	
	832	5,836		
- Carbon Monoxide	135	947	270	1,893

Silo filling emissions[f]				
- Total Particulate Matter	59	211	117	423
- Organic Particulate Matter	25	178	51	356
- Total Organic Compounds (Method 25A)		1,219	8,550	
	2,437	17,100		
- Carbon Monoxide	118	828	236	1,656

a. EPA estimates for batch plant in lb/100,000 tons of HMA. Volatility of 0.5%, 325° F.
b. Citizen estimates for batch plant in lb/100,000 tons of HMA. Volatility of 1.0%, 375° F.
c. EPA estimates for drum plant in lb/200,000 tons of HMA. Volatility of 0.5%, 325° F.
d. Citizen estimates for drum plant in lb/200,000 tons of HMA. Volatility of 1.0%, 375° F.
e. Loadout emissions for both batch and drum plants - See Table 11.1-14. AP-42.
f. Loadout emissions for plants with silo storage- mainly, but not exclusively, drum plants. See Table 11.1-14. AP-42.

g) *The issue of the "Background" correction*

Many of the methodological problems which occurred throughout this program are crystallized under EPA's topic of the "background correction". Background correction at Plant C refers to EPA's attempts to separately measure loadout emissions mixed with truck exhaust and just truck exhaust in order to subtract the truck exhaust values from the former to obtain a "pure" value for loadout emissions. But, the equipment for collecting the emissions in the tunnel at Plant C was not 100% efficient. Under such conditions of inefficient collection, the standard engineering practice is to use a tracer gas to measure the collection efficiency and then correct the raw emission data for this inefficiency of capture to arrive at a more appropriate estimate of the actual emissions. (Whether a single average collection efficiency factor should be used for adjusting all three runs or whether more time-specific collection efficiency factors should be used has been discussed extensively in previous comments by the citizens. Also, the math works out such that if the truck exhaust value is high, the net value for the "pure" loadout emissions will be low.)

EPA conducted such a "background" run to measure just truck emissions. However, the data collected during the run had so many problems that EPA abandoned standard data reduction procedures to obtain an answer that they liked. There are three problems: First, the raw data shows a doubling in the background emissions from the first half to the second half of the run. What caused this doubling? Second, even if one uses the background data from the low first half of the run, the numbers are still too high. What is the cause of this result? Third, why did EPA abandon the standard engineering procedure for correcting measured emissions for capture efficiency? These various problems with this background run are discussed below:

i) Inconsistent raw data: The raw data, i.e., data as recorded, and not corrected for capture efficiency, shows two very distinct regimes in the run, with a break in between. The first regime is flat with little fluctuation and shows an average reading of 0.8 ppm of total hydrocarbons (THC). The second regime, which is also relatively flat, shows a value about twice this

level. The first issue is what caused this doubling of measured emissions. EPA was unable to provide a credible explanation. The citizens believed that this increase was achieved by parking a second truck at the entrance to the tunnel so that the second regime was based on measuring emissions from two trucks. In the final RESPONSE TO COMMENTS report, EPA used only the first portion of the background run, hoping to avoid this inference that the background numbers were inflated. However, the second truck was at the entrance even in the first portion of the run, though for shorter time periods. Thus, as shown below, it is not clear that the lower values measured in the first regime represent exhaust from just one truck.

ii) Is the background reading from the first half of the run low enough?: By selecting only the data from the first half of the run and by not averaging the two regimes, it would appear that EPA has avoided problems with data reduction. Unfortunately, this is not the case.

iii) Problems with data corrected for capture efficiency: Standard protocol requires that when collection is not 100% efficient, the raw data has to be corrected for capture efficiency. Capture efficiency is measured with a tracer gas. Unfortunately, when correction is applied to the background data from the first half of the background run and subtracted from the combined loadout plus truck emissions to get "pure" loadout emissions, one gets negative values for several hazardous air pollutants. Since this is an impossible result, EPA decided to use the raw uncorrected background number rather than the capture-efficiency-corrected background number. Even after adopting this unusual procedure, some "pure" loadout emissions were still negative and they were assumed to be zero. There is a major problem with this procedure. There is no technical/ scientific justification for ignoring capture efficiency. The only justification is that it produces numbers acceptable to EPA. The citizens suggested that the background "correction" be eliminated and the loadout emissions data reported as "truck plus loadout emissions". This suggestion was summarily rejected. We reproduce the first paragraph of EPA's summary rejection (3.2.2):

"The background adjustment was appropriate. There was no improper manipulation of the data from the background test at Plant C and EPA did not manipulate the placement of the trucks to obtain higher uncorrected emissions for the background run. Further, we do not agree that the background run demonstrates that data was manipulated to produce biased results and do not believe that concurrently measured truck exhaust and road dust emissions should be included in the emission factor for load_out emissions."

EPA states further that:

"The only additional instruction provided to the truck drivers during the background test was to reduce the time of their travel from the exit of the tunnel to the arrival at the tunnel entrance.....At about the time trucks began driving faster to reduce gaps between trucks, the wind speed increased. This may have caused an increase in the diesel exhaust that

entered the tunnel entrance or increased the capture of the diesel exhaust of the truck that was inside the tunnel." (Emphasis added.)

The problem with these explanations is that the raw data clearly shows that the reading doubled in the second half of the run. This doubling needs to be explained. Above, EPA is admitting that there may have been an increase in diesel exhaust entering the tunnel entrance, i.e., exhaust from two trucks was being counted, but this possible explanation is two paragraphs after the original denial. Also, note the statement, *"Dr. Nadkarni* [the citizen observer at the Plant C tests] *observed the operation of the trucks during the background run. The issue of manipulating the placement of the trucks was not raised by him during the test to either of the EPA personnel present."* This statement is incorrect. On the day of the run, he left early to catch a plane and was not present when the second half of the data was collected. Further, problems of this type are visible only after the data has been collected and viewed. Such insights are impossible in the field. Dr. Nadkarni had objected originally to the background "correction" because it seemed to be an unnecessary manipulation of data and the results. In retrospect, his concerns were well founded.

The explanations of why the background reading was not corrected for capture efficiency, in 3.3.4, are mutually contradictory. The tracers used to measure capture efficiency showed that capture efficiency was high early in the morning and decreased as the day wore on during all the runs at Plant C. The most reasonable explanation was that as the land around the plant heated up, there was an on-shore breeze which blew through the tunnel and decreased the capture efficiency. The capture efficiency data for the background run is consistent with this general statement. This also means that truck emissions captured in the second half of the background run, when corrected for capture efficiency, were three times those in the first half. This further confuses the issue. To the citizens, these problems raise serious questions about both the first and second half of the run. The general scientific procedure when data can't be explained is to reject it.

Finally, it should also be noted that the auditors from RTI were apparently not involved in a detailed analysis of this procedure of collecting "background" data.

This background correction introduces a low-bias in the published results for load out emissions. EPA's estimate of this bias introduced by not correcting for capture is about 20%. Both EPA and citizens' numbers in Table 1 would have to be increased by this amount to compensate for this unexplainable "background" factor. The citizens believe that the entire procedure is faulty and should be rejected.

a) *Problems with enclosures*

At Plant C, because the loadout enclosure did not meet the requirements of Method 204, an EPA protocol for constructing total enclosures for measuring pollutant emissions, a tracer gas was used to measure the capture efficiency. At Plant D, because the specially constructed loadout enclosure met the requirements of Method 204, it was assumed that all the emissions would be "captured". Method 204 gives precise design requirements which put limits on the size of Natural Draft Openings compared to the surface area of the walls, floor and ceiling of the enclosure with the desired ratio being less than 5%, the

velocity at Natural Draft Openings to be at least 200 ft per minute and other limitations on the distance between the opening and the emission source. In essence, under Method 204, an induced draft fan collects the fumes from inside the enclosure and delivers them to the instrumentation at the sampling point. By controlling the openings (Natural Draft Openings) to a specific size, the intent is to force outside air into the enclosure, avoiding any loss of the material being sampled. As the data shows, complying with these requirements still does not result in proper sampling of fumes inside this enclosure. This point is illustrated by the following situation.

i) The loadout enclosure is empty. The instrumentation measuring hydrocarbons is showing zero hydrocarbons since the fan is pulling in just air from the empty enclosure. (See paragraph vi below.)

ii) A truck stops under the loadout point. Hot mix asphalt is dumped into the truck from a silo (a single dump) or from a batch mixer (several dumps with a waiting period in between). During this period, the air and asphalt fume in the enclosure are pulled past the hydrocarbon measuring instrumentation by a fan.

iii) The truck loadout is complete, but the instrumentation continues to indicate and record hydrocarbon emissions from the hot mix sitting in the truck

iv) The truck leaves the enclosure. One should expect the fan to evacuate all of the fume from inside the enclosure and for the hydrocarbon reading to go to zero quickly. But this does not happen. As a matter of fact, the readings persist at a non-zero value for a long period of time showing that Method 204 does not do a good job of delivering hydrocarbons from inside the enclosure to the measuring point. In other words, since the emissions lingering in the enclosure are not delivered to the instrumentation for measurement, they are not "captured".

v) The truck will continue to emit hydrocarbons in the yard of the manufacturing plant. These are not captured by the sampling system attached to the enclosure. In the report, these have been estimated as the so-called "yard emissions".

vi) The next truck enters the enclosure. If the enclosure was doing the proper job, it would have shown an initial reading of zero, as mentioned above under i. However, this is rarely the case since these emissions linger in the enclosure.

Criticism of Method 204 was provided to the EPA before the Plant D tests but was ignored. One of the problems with Method 204 was illustrated during the first day of testing at Plant D. Method 204 requires that the inward velocity at any opening be maintained over 200 feet per minute (fpm) so that air is flowing into the enclosure and not out of the enclosure. Note that 200 fpm is less than 2.3 miles per hour, which is not much of a breeze. At Plant D, the citizens observed that some of the fumes were escaping from the top or the bottom openings in the downwind door of the tunnel because of an ambient breeze. The contractors corrected this by decreasing the size of the openings by about half at the end of the first day of testing. Once this was done, this upset condition did not occur again. EPA's recollection of this event is quite different. (3.1.2).

In spite of these deficiencies, EPA position was:

"As the analysis is an extrapolation of only two data runs and the enclosure was designed to Method 204 criteria, EPA believed that the actual uncaptured emissions are most likely smaller than estimated by our analysis. Therefore, no further adjustments were made to the loadout emissions from Plant D." (3.1.2)

This is a confusing argument. The citizens position is that EPA again biased the results by this action. EPA's estimate of this bias is of the order of 10% and this adjustment would have to be used to adjust the EPA and citizen numbers in Table 1, but this adjustment could easily be double this value, i.e. 20%, in our opinion.

a) *EPA's flat denial of errors in the report*

In the Introductory Section of our last response, reproduced in the current report as 1.1.1, we commented that we were dissatisfied with the report review process because EPA released draft reports that were not sufficiently finalized. We specifically referred to the following problems; incorrect references, missing and incorrectly referenced appendices and numerical and logical errors in the analysis. We were referring to the entire review process, not just the current cycle. Also, our point was that EPA should produce draft reports that are free from error and the review process should not become a search for a needle in a haystack if a large document is referred to without providing a page number. Further, once the responsibility for finding each mistake is entirely passed to the reviewers who are volunteering their time for the review, such mistakes will persist in the final report as such volunteer reviewers miss them. In their current response to comments, EPA responded on page 1:

> *"The comment with respect to numerical and calculational errors is unsubstantiated in that no instances of any numerical or calculational errors were provided by the commentors."*

This comment is not accurate. In the previous round of comments, such numerical and calculational errors were shown. These included averaging data over a period when there were no emissions because trucks were absent, and showing a wrong number as a maximum value. These mistakes were not caught by EPA'S auditor Research Triangle Institute (RTI). Although chances are that RTI's contract focused on data collection procedures and did not include an auditing of data reduction and data analysis, their role is being exaggerated in the final report. At industry's urging, EPA is including the following statement in the Final Report. *"For example, two scientific auditors from the Research Triangle Institute were employed to independently audit the test and reporting process."* (1.4.38). If RTI is to be given credit for the audit process, they should also be assigned blame for its failures.

EPA did admit to problems with references and appendices but stated that the missing appendices were provided on October 6 (1.1.2) or October 3 (1.4.54). They fail to mention that this was over a month after the end of the comment period.

At Plant D, two citizen observers noted what appeared to be errors in protocol for

sampling. Specifically, when the sampling train was rinsed to recover condensed organic matter, the observers saw that the entire tube was not being rinsed. When this issue was mentioned, EPA's denial was immediate and strong, even before the citizens had explained their observations.

Numerous logical errors and examples of bias were pointed in comment letters, To this, EPA's response is, *"The information presented in the reports as drafted are (sic) unbiased."* (1.2.6). An example of an "unbiased" statement, we suppose, is the following from 2.4.6: *"The lack of data to substantiate the statement is not a reason to eliminate the statement".*

b) Unfounded Leaps of Faith

In 3.7.2, while criticizing the use of model compounds by others at a time when no data on the composition of asphalt fume was available[11], EPA defends its own use of model compounds when such data on composition of asphalt fume is available. Furthermore, this data clearly shows that the two substances selected by EPA as model compounds, docosane and tricosane, are not the major measured constituents of asphalt fume. Standard scientific practice would be to use the best information available for this purpose. When data is available on the major constituents of asphalt fume, EPA chose these two compounds purely for expediency when data shows otherwise. EPA states, *"The Antoine's coefficients for aliphatic hydrocarbons that come the closest to producing a working loss emission estimate of 32 pounds per million gallons of asphalt throughput for this approximate molecular weight are docosane and tricosane."* In other words, these compounds are chosen because they give the desired result.

A similar contradiction exists in 3.7.6. Here EPA admitted that reference 360 in Appendix B, a report of certain tests by Division of Air Quality, North Carolina Department of Environment and Natural Resources, 1998, was not evaluated critically but then EPA ignored the comments offered by the citizens. These comments had pointed out that the authors of the reference had selectively ignored high readings of ambient benzene concentrations and used only the low readings. Further, they had used questionable methodology to convert an ambient concentration to an emission rate. Nevertheless, EPA decided to retain this defective information in the final report stating: *"The reference was not read critically..... the results that were developed for truck load_out (*in this reference*) do provide limited support for the load_out emission estimates for benzene."* In other words, EPA will continue to use this faulty information because it, purely by accident, appears to provide limited support to an EPA-derived number.

c) *Problems with witnessing tests*

The citizens were permitted to witness the actual tests at Plant C and Plant D. One individual, Dr. Nadkarni, was allowed to be present at Plant C and up to 3 individuals, were allowed at Plant D. While there can be justifiable concerns about visitor safety and owner liability when visitors are allowed to wander unfettered around an operating industrial plant, the usefulness and limitations of allowing a single witness need to be discussed.

The first issue is what a single witness can see when data is being gathered using complex

instruments or complex sampling trains in various places simultaneously. Second, when access is also prevented under the claim of confidentiality, much information is shielded from citizen observers and discrepancies are seen by the citizen observers only after the data has been published in a draft report. (See references and for details on the questions raised about the data.) In an industry where the manufacturing equipment is available from several competing firms who will provide all the necessary details in order to sell this equipment, and the product is produced to published customer specifications, our view is that there IS little proprietary content. If plant operating procedures are proprietary, they would be of interest only to another HMA manufacturer and access to these details would be obtained, as in other industries, by hiring away a plant operator. Yet, access to information was blocked on many occasions under the cloak of confidentiality. Following are specific incidents where there were differences between the observations by the citizen observer and the EPA.

i) Emissions from the downwind end of the tunnel: In the discussions leading up to the actual testing at Plant C, EPA asserted several times that they had not observed any fugitive emissions exiting the tunnel at Plant C. However, they agreed to use tracers to measure capture efficiency. When Dr. Nadkarni arrived at Plant C on the day before the first test, he was surprised to see visible emissions exiting from the tunnel. (Such emissions were seen during each day of the test, typically later in the day when the ambient breeze became stronger.) Several times when this phenomenon was pointed out to EPA staff, they ascribed these emissions to a plant malfunction. Since citizens could not take photographs but EPA could, he requested that this fume be photographed and several times his request to document this photographically was turned down because the fumes might not be visible in a photo. When the draft report was published, the capture efficiency numbers corroborated this observation that fume was escaping from the downwind side of the tunnel, contrary to EPA assertions during planning, but there is little photographic evidence. Yet, at Plant C, the EPA Project Director spent almost an entire day with a videographer hired by the industry association consulting him on what to videotape.

In case of Plant D, no tracers were employed because the specially constructed enclosure was presumed to meet Method 204 requirements. The shortcomings of method 204 were obvious to the citizen observers on the first day of testing. Two citizen observers noted that the streamers at the Natural Draft Openings on the downwind side (above and below the door) were pointing towards the outside showing that a breeze was counteracting the draft induced by the fan. Again, there is no photographic evidence. While this problem was corrected for days 2 and 3 by installing plywood to reduce the size of the openings by half, EPA claims that this observation was not communicated to them until much later. (See 3.1.2) Similarly, the citizens observed that the fume lingered for a long time inside the enclosure at Plant D and was not transferred to the measurement point, as was discussed earlier in Section . Again, the citizens could not document this because of the restriction against photography.

ii) Lack of information sharing and access to instrumentation: At Plant C, the control room was cleared of all observers several times. Therefore it was not possible to take actual readings to double check the readings taken by EPA contractors. (This is not to cast any aspersions on the contractors who took these readings. Our point is that it was not possible to double check these readings). EPA had information on the volatile content of asphalt prior to and during testing at both plants. This information was not shared until much later.

iii) Prejudging of final outcome: On the day before the start of testing at Plant C, the industry hosted a dinner attended by the senior EPA staff member and the citizen observer. The citizen observer was quite surprised when the industry was told by the EPA staff member that EPA had no intention of regulating fugitive emissions from their industry.

Conclusion

Citizens, industry and EPA-RTP have undergone a lengthy process during the last six years to examine fugitive emissions from asphalt plants. This process suggests that there are lessons to be learned regarding a number of aspects of this exercise.

1) An epidemiological study should be undertaken by the government to better understand the quantity and intensity of health problems caused by exposure to asphalt fume. In our very limited casual interaction with individuals across the country, we have had too many anecdotal histories come to our attention to ignore this public health problem. These histories include the deaths of otherwise healthy farm animals barned within several hundred yards of an asphalt plant in the northeast section of the country, rashes and difficulty breathing by humans all across the country, each living in close proximity to one of these facilities, and cancer clusters in proximity to asphalt storage tanks at terminals. It is hard to believe that each of these instances is due solely to uncaring plant operators lacking concern for the impact of their business on the surrounding neighborhood. Even if the cause is determined to be hypersensitivity by individuals to certain chemicals, this is an issue that should not be faced by each individual citizen as his or her "problem" but rather is a responsibility for society as a whole, as well as for the industry.

2) A number of the EPA's regional offices have extensive experience in working through environmental concerns in concert with citizens rather than in opposition to the public. Some of the citizens who are working with this problem of asphalt fume have heretofore had productive relations with their regional offices of EPA on other industrial concerns. It may be that EPA-RTP has not had reason to develop protocols for interaction with the public, possibly because more of its business is conducted with industrial representatives. Nevertheless, it may be appropriate that EPA-RTP review its approach to citizens to find ways of

encouraging that dialogue with an emphasis on cooperation and mutual respect. It is important that the public understands that it IS no less a partner with government at every level than is industry.

3) Industry and state environmental departments place great reliance on AP-42 emissions factors during the process of local permitting. However, AP-42 contains averaged data collected under the best of circumstances and is a poor source to determine "worst case" environmental impact scenarios. Many of the factors representing these worst cases are not as clearly represented in that document as it could be. To avoid misuse, simple changes in the layout could be accomplished such that where appropriate, the limitations of factors are made more evident, without recourse to the introductory language of this lengthy government publication. Even a standard "warning" or notice attached to each table could begin to highlight this complexity.

4) Industrial proprietary information varies from industry to industry. While some industries' competition may involve truly cutting edge technology, methodology and technique, other industries' competition is based on non-technical non-proprietary factors such as location and market power. Restrictions on oversight by the public during EPA financed tests as were conducted may be appropriate in one instance, and in other instances may more reflect an attempt by industry to hinder open and frank discourse. We believe that Government should aggressively challenge, where appropriate, unsubstantiated demands for secrecy by industry which ultimately reflect negatively on both that industry and on the government.

Asphalt Plant Safety Issues

Watson Construction accidental fire

Truck accident

Other asphalt plant explosions and truck accidents

American Academy of Pediatrics
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Policy Statement

Pediatrics **Volume 91, Number 6** **June, 1993, p 1210-1213**

Ambient Air Pollution: Respiratory Hazards to Children (RE9317)

AMERICAN ACADEMY OF PEDIATRICS

Committee on Environmental Health

Levels of many outdoor air pollutants decreased substantially after the passage of the Clean Air Act of 1970; however, levels of ozone, carbon monoxide, and particulate matter are still high enough to present hazards to children. Failure to meet the federal standards for these pollutants was a major force driving the adoption of the revised Clean Air Act of 1990. In addition, recent research indicates that acidic aerosols, for which there are no health-based standards, may be associated with adverse respiratory effects.

As an ambient air pollutant, ozone is formed by the action of sunlight on nitrogen oxides and reactive hydrocarbons (both of which are emitted by motor vehicles and industrial sources). Ozone levels therefore tend to be highest on warm, sunny days, which are conducive to outdoor activities. In many areas ozone concentrations peak in the midafternoon, when children are likely to be playing outside. It is important to distinguish ground-level ozone air pollution from stratospheric ozone depletion by chlorofluorocarbons. These issues are unrelated. Carbon monoxide, a product of incomplete combustion, is emitted mainly from cars and other mobile sources. Airborne particulate matter is a variable and complex mixture of natural materials and substances released from numerous industries, motor vehicles, residential wood burning, construction and demolition, and other sources. Acidic aerosols are traceable mainly to combustion of sulfur-containing fossil fuels and to reactions of photochemical free radicals with nitrogen dioxide.

Exposure to ambient air pollution in North America has been clearly associated with acute and subacute effects in epidemiologic investigations and in controlled exposure studies in environmental chambers. For example, ozone causes airway inflammation and hyperreactivity, bronchial epithelial permeability, decrements in pulmonary function, cough, chest tightness, pain on inspiration, and upper respiratory tract irritation. [1-7] Nonrespiratory effects associated with ozone exposure include nausea, headache, malaise, and decreased ability to perform sustained exercise. [7-9] Epidemiologic studies link increased ozone concentrations with exacerbations of asthmatic symptoms. [10,11] Controlled chamber studies suggest that low concentrations of ozone do not cause dramatic bronchoconstriction in asthmatic volunteers, although at higher concentrations asthmatics experience greater airway obstruction than healthy study subjects. [12-14]

Although healthy children appear to experience losses in pulmonary function comparable with those observed in adults for a given dose of ozone, children do not report symptoms to the same extent. [15-18] This suggests that children may not experience or recognize somatic signals to curtail exposure. Field studies suggest that ozone effects on pulmonary function in children are much greater

than would be predicted from chamber studies. [19] Moreover, decreased peak flow in children has been reported to persist for up to a week following exposure to ozone concentrations lower than 0.2 ppm, suggesting the presence of damage to the respiratory tract. [20] Repeated exposures may result in persistent bronchial hyperresponsiveness. [21]

Controlled exposures to low ozone concentrations (at and below the current federal standard of 0.12 ppm) involving moderate levels of exercise for several hours have resulted not only in pulmonary function changes and respiratory symptoms, but also in dramatic increases in inflammatory markers in bronchoalveolar lavage fluid. [1,2,5] These findings are consistent with animal studies indicating that repeated exposures to ozone concentrations found in typical urban air result in centriacinar inflammation and small-airway structural changes. [22-24] Epidemiologic studies suggest that repeated exposures to ozone and other photochemical oxidants and particulates are associated with an accelerated decline in lung function and with symptoms of chronic respiratory disease; however, the quantitative aspects of such a relationship have not been adequately explored. [25,26] One recent study links oxidants (primarily ozone) and other air pollutants in Los Angeles, CA, with daily mortality. [27]

Epidemiologic studies undertaken in a variety of locations indicate a relationship between outdoor air pollution and adverse respiratory effects in children. The pollutants most frequently implicated in these studies have been respirable particles (notably acidic sulfates) and ozone. Examples of health outcomes found to be correlated with air pollution levels include increased prevalence of chronic cough, chest illness and bronchitis (measured by questionnaire), hospital admissions for various respiratory conditions, and decrements in lung function. [28-33] The prevalence of respiratory symptoms was markedly increased among children with a history of asthma or wheezing. [34]

Controlled studies involving adolescents with asthma have found that exposure to acidic aerosols affects results of pulmonary function tests. [35,36] A recent study of asthmatic adults found a significant association between ambient airborne acidity and daily fluctuations of asthmatic symptoms, including cough and shortness of breath. [37] Acidic aerosols also have been found to provoke changes in tracheobronchial clearance and increased airway reactivity in normal subjects. [38,39]

The effects of exposures to multiple pollutants are difficult to study in humans. A few controlled investigations and field studies indicate, however, that exposures to complex mixtures of air pollutants may have synergistic acute effects on pulmonary function and, possibly, on symptoms. [19,40,41] A recent report suggests that even brief exposure to ozone can potentiate allergic asthmatic responses to aeroallergens. [42] There is, moreover, a substantial body of experimental evidence in animals indicating that ozone can lower resistance to infection, facilitate sensitization and airway responses to airborne allergens, and act synergistically with airborne acidity to damage deep lung tissues. [43-47]

CONCLUSIONS

Existing epidemiologic and toxicologic data indicate that exposure to ambient air pollution is associated with respiratory toxicity. The decrements in pulmonary function observed in epidemiologic and experimental studies involving children exposed to ozone and other pollutants may last longer than the episodes of pollution that initiate these changes.

A factor that increases children's vulnerability to airborne pollution is that their airways are narrower than those of adults. Thus, irritation caused by air pollution that would produce only a slight response in an adult can result in potentially significant obstruction in the airways of a young child. Moreover, children have markedly increased needs for oxygen relative to their size. They breathe more rapidly and inhale more pollutant per pound of body weight than do adults. In addition, they often spend more time engaged in vigorous outdoor activity than adults. Experimental and epidemiologic data provide grounds for concern about chronic lung damage from repeated exposures.

Current strategies in the United States for attaining clean air and protecting public health have been only partially successful. Thus, the American Academy of Pediatrics offers the following recommendations:

Recommendations to Government Agencies

1. Ambient standards. The federal ambient air standard for ozone of 0.12 ppm (averaged over 1 hour) contains little or no margin of safety for children engaged in active outdoor activity. In view of recent research indicating the occurrence of adverse effects at ozone concentrations lower than the current standard, the Academy recommends that the standard be reconsidered for possible lowering (see Figure 1a and Figure 1b). Similarly, epidemiologic evidence has shown that the current federal standard for particulate matter provides less than optimal protection of public health and should be lowered.
2. Smog alerts. State and local government agencies have a responsibility to issue pollution or smog alerts in a clear and timely manner. These alerts should warn specifically of the hazards that air pollution presents to children. Furthermore, recent evidence indicates that respiratory toxicity occurs at ozone concentrations lower than the stage 1 smog alert concentration (0.20 ppm, 1 hour average) recommended by the US Environmental Protection Agency, suggesting the need for reconsideration of this advisory level. Among other things, the stage 1 alert level triggers advisories to schools that outdoor activities should be restricted.
3. Source control. State and federal governments must act more vigorously in the arena of pollution prevention, in terms of both technologic requirements and public education. Regulatory agencies should act aggressively to implement the requirements of the Clean Air Act of 1990.

Recommendations to Pediatricians

1. Pediatricians should become informed about air pollution problems in the community.
2. Pediatricians caring for children at special risk, such as those with asthma and cystic fibrosis, should be aware that current levels of air pollution may cause deterioration in these children's pulmonary function and may aggravate their symptoms.
3. Pediatricians who serve as physicians for schools and for students participating in team sports need to be aware of the health implications of pollution alerts in order to provide appropriate guidance to schools and other public agencies on the health hazards of air pollution.
4. Pediatricians can make parents aware of the predictable daily variation in ozone, especially the tendency to peak in the afternoon. This awareness is essential in areas with recognized high ozone levels. When ozone levels are elevated, it may be possible to decrease children's exposure by scheduling outdoor sports earlier in the day.
5. Pediatricians can help children by expressing their concern about the child health hazards of air pollution to their representatives and to policymakers within state and federal governmental agencies.

COMMITTEE ON ENVIRONMENTAL HEALTH, 1992 TO 1993
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Lynn R. Goldman, MD, MPH
Jim G. Hendrick, MD
Howard C. Mofenson, MD
Peter R. Simon, MD

LIAISON REPRESENTATIVES
Henry Falk, MD, Centers for Disease Control
Robert W. Miller, MD, National Cancer Institute
Walter Rogan, MD, National Institute of Environmental Health Sciences

CONSULTANTS
Herbert L. Needleman, MD
Richard J. Jackson, MD
Philip Landrigan, MD
Michael Lipsett, MD

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The recommendations in this statement do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

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Outdoor air quality
Indoor air quality
Flu
Facilitator training

Research
Advocacy
Press center
Thoracic Society
Español

National ALA
Smoke-free Class of 2000
Big Ride 2000

American Lung Association of California Position Statement

Position Title:

Reducing Public Exposure To Diesel Emissions From Heavy Duty Vehicles

Adopted : December 9, 2000

Position Subject: Environmental Health/Air Quality

Committee: ALAC/CTS Government Relations Committee

Position Text:

The American Lung Association of California (ALAC) supports action at the federal, state and local level to reduce emissions from diesel-powered heavy duty on-road and off-road vehicles and advocates the steady transformation from diesel to cleaner non-diesel alternative technologies including CNG, fuel cells and zero emission vehicles to reduce public health damage and cancer risks. Because centrally fueled fleets are the best candidates for early transformation from diesel to alternative technologies, the American Lung Association places high priority on acquisition of alternative fueled vehicles in public and private fleets. The American Lung Association urges federal, state and local governments to provide leadership in reducing diesel health risks by establishing preferences for the acquisition of non-diesel, alternative fuel heavy-duty vehicles in public fleets including transit buses and school buses.

Furthermore, ALAC supports actions at the state and local levels to reduce emissions from diesel technologies and fuels as expeditiously as possible, including: stringent emission standards for new diesel engines and strong retrofit requirements for existing engines combined with incentive funding programs to help achieve the earliest possible benefits from engine upgrades and replacements. ALAC also supports in-use testing and roadside enforcement requirements to ensure both new and retrofit technologies achieve expected emissions reductions during real world operating conditions over the life of the vehicle. Finally, ALAC supports the adoption of low-sulfur fuel requirements to achieve the lowest sulfur possible in diesel fuel (below 15 ppm, and if feasible, as low as 5 ppm) as expeditiously as possible, but no later than 2004 to ensure the most rapid and successful introduction of new and retrofit technologies.

Background:

Despite their small numbers compared to the total vehicle fleet in California, diesel engines account for 40 percent of the total nitrogen oxide (NOx) emissions and two-thirds of the total particulate matter (PM) from mobile sources. Compared to the overall vehicle fleet, diesels have been relatively uncontrolled; they have not been subject to the same levels of stringent emissions controls and in-use testing requirements similar to the state's vehicle inspection and maintenance program, Smog Check.

Because of the mounting evidence of diesel health risks, federal and state agencies have moved to adopt more stringent controls on diesel. The California Air Resources Board has determined that diesel particulates account for 70% of the cancer risk from toxic air contaminants statewide. To reduce statewide toxic risks, CARB adopted a diesel risk reduction plan in September 2000 for on-road and off-road engines to reduce PM emissions by at least 85 percent from the existing fleet and 90% from new heavy-duty engines over the next ten years. The plan will require the adoption of 14 separate rules between 2000 and 2002 covering diesel retrofits, new engine standards, and low-sulfur fuel (less than 15 ppm sulfur) production requirements.

The U.S. EPA has proposed new standards for heavy duty trucks and buses that would reduce the public's exposure to diesel exhaust in California and across the country. Under the EPA proposal, the oil industry would be required to produce a low-sulfur (15 ppm) diesel fuel by mid-2006, followed by requirements for engine manufacturers to produce new diesel engines that produce less particle (PM) pollution by 2007. Stricter engine standards for NOx and hydrocarbons would be phased in between 2007 and 2010

While state and federal governments are moving forward to ratchet down on emissions from diesel fuels and technologies, there are very few requirements for acceleration of alternative fuel technologies. Most engine manufacturers and all major oil companies have consistently advocated a 'fuel neutral' policy with CARB, the State Legislature and the Governor's Office. Due to their well funded lobbying efforts, it has been extremely difficult to carve out a market segment for alternative fueled, heavy duty technologies. While the South Coast Air Quality Management District adopted an alternative fuel procurement requirement for public fleets in June 2000 based on clear statutory authority, the rule was strongly opposed by diesel interests and has been contested in court. Because CARB adopted a 'fuel neutral' transit bus rule in January, 2000, allowing local transit agencies to choose between a diesel or alternative fuel path for the future, battles are being fought between alternative fuel and diesel advocates at the local government level to determine the fuel choice for new purchases.

The state's Carl Moyer Air Quality Attainment Program has been successful in spurring voluntary action to reduce diesel pollution by providing financial incentives for replacement and/ or upgrading of heavy-duty diesel engines.The American Lung Association of California has supported the Moyer program from its inception and continues to support increased State budget appropriations to increase incentives and participation. While Moyer funds are not programmed to a specific fuel choice, the funds have been very helpful to local governments in subsidizing the costs of acquiring new CNG buses.

Health Effects of Diesel

Diesel exhaust is a major statewide source of particulates, which cause respiratory illnesses and are carriers of toxic chemicals; and of NOx, which combines with hydrocarbons to generate ground level ozone. Diesel exhaust has been linked in numerous scientific studies to cancer, the exacerbation of asthma and other respiratory diseases and premature death. Diesel exhaust contains hundreds of constituent chemicals, including many that are human toxicants, carcinogens, or present reproductive hazards. Forty chemicals in diesel exhaust are on California's list of Toxic Air Contaminants, and the residents of California face high diesel-related health risks based on the heavy concentration of diesel truck traffic in urbanized areas and recent reports demonstrating that diesel cancer risks far outweigh cancer risks from other toxic air contaminants.

Since 1990, diesel exhaust has been listed as a known carcinogen under California's Proposition 65, and in 1998, the California Air Resources Board (CARB) formally listed diesel particulate as a Toxic Air Contaminant (TAC). The extensive scientific literature demonstrates that exposure to diesel exhaust increases the risk of developing lung cancer and other non-cancer health problems. In listing diesel as a TAC, CARB determined that the increased cancer risk from diesel particulates could cause premature deaths in more than 14,000 Californians exposed to diesel pollution over a lifetime.

Diesel exhaust is a major source of particle pollution in California. Ninety-four percent of diesel emissions are estimated to be fine particles, less than 2.5 microns in diameter, that can bypass respiratory defense mechanisms and lodge deep in the lungs. Numerous studies have found that fine particles impair lung function, aggravate respiratory illnesses such as asthma, bronchitis and emphysema, and are associated with premature deaths. Dozens of studies link airborne fine particle concentrations to increased hospital admissions for respiratory diseases, chronic obstructive lung disease, pneumonia and heart disease. Diesel is also a major contributor to ozone pollution in California. Ozone air pollution, generated by NOx and hydrocarbons from fuel combustion, is a powerful respiratory irritant that may lead to shortness of breath, chest pain, wheezing, coughing, and exacerbation of respiratory illnesses such as asthma. Long-term and repeated exposures may lead to large reductions in lung function and inflammation of the lung lining.

Recent studies on the relationship between asthmatic responses and proximity to major roadways add to concerns about diesel's contribution to asthma. Studies have shown that the proximity of a child's school or home to major roads may be linked to asthma, and the severity of children's asthmatic symptoms increases with proximity to truck traffic. Studies are ongoing in this area of research.

Recent reports by the California Air Resources Board (CARB) and the South Coast Air Quality Management District have concluded that diesel exhaust is the most significant source of air toxics in California and accounts for over 70% of the cancer risk statewide and in the South Coast Air Basin from toxic air contaminants. While the particulate component of diesel was specifically listed as a toxic air contaminant by CARB, both the particulate and hydrocarbon components of diesel have been associated with diesel toxic risks.

Diesel Emissions and Environmental Justice

The impact of diesel on public health and the environment goes far beyond tailpipe and engine emissions. All petroleum fuels, including diesel, have emissions and environmental impacts throughout the fuel cycle that have not been accounted for in statewide emissions estimates. Diesel emissions are released throughout the process of fuel production, refining, distribution, dispensing and use. Petroleum refining, distribution, and storage facilities are predominantly located in low-income and ethnic communities already burdened by multiple air pollution and toxic risks. Modifications to refineries, even to improve the cleanliness of diesel fuel, have localized impacts that may increase health dangers and environmental justice concerns in nearby communities.

CARB data indicates that diesel engines statewide are responsible for about 384,345 tons/year of nitrogen oxide pollution and 28,000 tons/year of particulate matter, not including emissions associated with refining and other steps in the petroleum fuel cycle. While diesel pollution harms everyone, the most serious health impacts are experienced by sensitive populations, including children, the elderly, and those with existing heart and lung diseases, as well as communities near truck stops, distribution centers, freeways and major highways, refineries or other sources of diesel exhaust.

The Role Of Alternative Fuels vs. Diesel

Alternative fuels such as natural gas are inherently cleaner burning than diesel and provide greater overall pollution reductions and public health benefits. Natural gas vehicles emit extremely small amounts of particulate matter (PM) and low levels of nitrogen oxides (NOx). Current natural gas bus engines emit about 50% less NOx and PM than comparable diesel bus engines based on engine certification levels. When in-use emissions are considered, diesel buses emit 11 - 22 times more PM than natural gas buses.

In the future, advanced technologies such as fuel cells and electricity will also be available for heavy duty applications. While transition to CNG technology is now a viable option for key segments of the heavy-duty market, there are some markets, such as long haul trucking, where transition to alternative fuels is not practical. In the future, as technology advances and fueling infrastructure expands, alternative fuels should become viable for these additional markets.

Diesel-engine proponents have recently raised concerns over the environmental impact of particulates from natural gas engines, citing limited evidence in a Harvard Center for Risk Analysis study that ultra-fine particle emissions from natural gas engines could be problematic. However, this study is a qualitative, not quantitative study, omits important information relating to CARB's findings on the link between diesel exhaust and lung cancer, and has been contradicted by several other studies. While ALAC continues to support continued research on particle pollution from all fuels, current testing on certified technologies confirms that CNG technologies have substantially lower particle pollution than diesel.

While promoting transition of diesel to alternative fuel technologies where practical is the preferred option on a long term basis, improving

Subj: **Re:Diesel dump trucks**
Date: 3/20/01 1:05:51 PM Eastern Standard Time
From: transpointern@ucsusa.org (transpointern)
To: ArtistKaty@aol.com

From Patricia Monahan, one of our analysts in the Clean Vehicles Program:

The amount of pollution released from a neighborhood refuse hauler will vary depending on various factors (including the age of the vehicle, operating conditions, engine type, maintenance, vehicle weight). The California Air Resources Board estimates the emissions from a heavy heavy duty vehicle (33,000+ lbs) to be from 13 to 28.5 grams/mile for nitrogen oxides and 0.2 to 2 grams/mile for particulate matter. A gasoline car would release about .41 gram/mile of nitrogen oxides and 0.005 grams/mile of particulate matter.

For a review of the health effects of asphalt, a fact sheet by the New Jersey Dept of Health can be downloaded at:
http://www.state.nj.us/health/eoh/rtkweb/0170.pdf

Patricia Monahan
Senior Clean Vehicles Analyst
Union of Concerned Scientists
tel. (510) 843-1872, ext. 308
fax (510) 843-3875
www.ucsusa.org

---Reply Separator---
Subject: Diesel dump trucks
Author: <ArtistKaty@aol.com>
Date: 03/19/2001 5:27 PM

The article about the diesel school buses was very informative.

Would you possibly have any information about the diesel dump trucks that are used to transport asphalt? We will have 240 dump trucks driving within 100 feet of our property each day. We have been told it is nothing to be concerned about, but we are feeling a bit uneasy about the prospect.

I was also trying to learn how much emissions a diesel dump truck might give off compared to a car. Would you have a source for that type of information?

Your time and effort in this matter is greatly appreciated.
This has been quite an education. I had no idea that this was an area where we should be concerned.

Katy Fischer
The article about the diesel
school buses was very informative.

Would you possibly have any information about the diesel dump trucks that
are

240 truck trips per day?

elieve the evidence shows that exposure to diesel exhaust is irritating and perhaps involved in serious respiratory and cardiac disease.

Thus I feel that you should be concerned and could ask for some form of remediation.

Good luck, Jane Koenig

Jane Q Koenig, PhD
Professor
Environmental Health, SPHCM
University of Washington
206 543 2026

On Mon, 19 Mar 2001 ArtistKaty@aol.com wrote:

> Dear Jane,
>
> Perhaps you might have some idea about exposure to particulate matter.
>
> My business in Florida is located within a few hundred feet from a gravel plant
> and asphalt plant.
>
> 240 diesel trucks will transport rocks and asphalt back and forth on a
> road which is within 100 feet of our property.

here is some buffer from a wall and trees, but I have been told that the
> dust will be visible on the cars and trees and the odors from the diesel
> trucks and asphalt fumes will be noticeable
>
> We will also probably find soot on the roof of our building.
>
> Do you think we should be concerned?
>
> We have been told it shouldn't be a problem, but people who live near similar
> plants say they are experiencing breathing problems and sometimes the dust is so thick that they stay indoors for relief.
>
> Your opinion would be appreciated if you could be so kind.
>
> Thank you for your time.
> Katy Fischer
>

——————— Headers ———————
Return-Path: <jkoenig@u.washington.edu>
Received: from rly-yg04.mx.aol.com (rly-yg04.mail.aol.com [172.18.147.4]) by air-yg04.mail.aol.com (v77_r1.21) with ESMTP; Wed, 21 Mar 2001 13:04:56 1900
Received: from jason01.u.washington.edu (jason01.u.washington.edu [140.142.8.10]) by rly-yg04.mx.aol.com (v77_r1.21) with ESMTP; Wed, 21 Mar 2001 13:04:30 -0500
eived: from homer03.u.washington.edu (jkoenig@homer03.u.washington.edu [140.142.15.37])
by jason01.u.washington.edu (8.11.2+UW01.01/8.11.2+UW01.03) with ESMTP id f2LI4SG31420
for <ArtistKaty@aol.com>; Wed, 21 Mar 2001 10:04:29 -0800
Received: from localhost (jkoenig@localhost)

Asphalt Fumes

Introduction

Over a half-million workers are exposed to fumes from asphalt, a petroleum product used extensively in road paving, roofing, siding, and concrete work. Health effects from exposure to asphalt fumes include headache, skin rash, sensitization, fatigue, reduced appetite, throat and eye irritation, cough, and skin cancer. There is no specific OSHA standard for asphalt fumes.

Recognition

- Asphalt Fumes Summary Sheet. OSHA Priority Planning Process (1996), 1 page.
- NIOSH Pocket Guide to Chemical Hazards-Asphalt fumes. (1999), 2 pages. This page contains information on the following topics: Synonyms & Trade Names, Exposure Limits, IDLH, Physical Description, Incompatibilities & Reactivities, Measurement Method, Personal Protection & Sanitation, First Aid, Respirator Recommendations, Exposure Routes, Symptoms, Target Organs, and Cancer Site.
- Criteria for a Recommended Standard: Occupational Exposure to Asphalt Fumes. NIOSH Criteria Documents (1977), 2 pages, and 154 pages of PDF files. This page contains information on the following topics: recommendations for an Asphalt Fumes Standard, Biologic Effects of Exposure, Environmental Data, Work Practices, Development of Standard, Research Needs, Method for Sampling Asphalt Fumes in Air, Analytical Method (Total Particulate), Analytical Method (Solvent Extraction), and Material Safety Data Sheet.
- Asphalt Fumes Fact Sheet. New Jersey Department of Health and Senior Services. (1994, May), 33.5 KB PDF file. Contains a variety of information including: acute and chronic health effects, workplace controls and practices, PPE requirements, questions and answers, and emergency response information.
- Literature Review of Health Effects Caused by Occupational Exposure to Asphalt Fumes. (1997, June 23), 9 pages. Paving asphalt and roofing asphalt exposure limits and health effects are discussed extensively in this literature review.
- Frequently Asked Questions About Asphalt, National Asphalt Pavement Association, 6 pages.
- Roofing Asphalt, Material Safety Data Sheet example, Intec/Permaglas.

- Roofing Adhesive, Material Safety Data Sheet example, U.S. Intec, Inc.

Evaluation

- Chemical Sampling Information for Asphalt Fumes (Petroleum). OSHA (1998), 1 page. This page contains information on the following topics: General Description, Exposure Limits, Health Factors, and Monitoring.
- Polycyclic Aromatic Hydrocarbons (PAHs). ASTDR-ToxFAQs (1996, September), 4 pages. This site lists health effects, routes of exposure and recommended exposure levels of PAHs a component of concern in asphalt.
- Development of Analytical Methods for PACs and Sulfur Compounds in Asphalt Fumes. Abstract #71 from the 1996 American Industrial Hygiene Conference and Exposition.
- Construction Health Hazard Evaluation. NIOSH Publication (1996, March), 3 pages. A study done on exposures to workers during asphalt pavement in Lansing, MI.
- Construction Health Hazard Evaluation. NIOSH Publication (1996, March), 3 pages. A study done on "crumb rubber modified" and conventional asphalt exposures during asphalt pavement in Yeehaw Junction, FL.
- Comparison of Field versus Laboratory Generated Asphalt Fumes. Asphalt Institute Executive Offices and Research Center, 19 pages. An industry perspective study to compare laboratory generated asphalt fumes and on the job created asphalt fumes.
- Laboratory Generation and Evaluation of Paving Asphalt Fumes. Asphalt Institute Executive Offices and Research Center, 15 pages. An industry perspective on a laboratory asphalt fume generator developed and validated against fumes collected by personnel monitors from field paving sites and paving asphalt storage tanks.
- Extraction and Analysis of Asphalt Pavement Core Samples: Detection of Coal Tar-Derived Species Using Chemical and Biological Methods. Asphalt Institute Executive Offices and Research Center, 15 pages. An industry perspective study on coal tar use in mastic asphalt pavements. This was done due to the concern of epidemiology studies showing elevated rates of cancer in the workers of the asphalt industry.
- Effects of Mode of Generation on the Composition of Asphalt Fumes. Asphalt Institute Executive Offices and Research Center, 16 pages. An industry perspective study conducted to determine the extent to which NIOSH's mode of fume generation affected their composition, and hence biological activity.
- Bio-Directed Fractionation of Laboratory-Generated

Asphalt Fumes: Relationship Between Composition and Carcinogenicity. Asphalt Institute Executive Offices and Research Center, 12 pages. An industry perspective study designed to determine whether workers in the asphalt industry incur significant carcinogenic risk from exposure to asphalt fumes.

- Detection of Coal Tar Materials in Asphalt Pavements Using Chemical and Biological Methods. Asphalt Institute Executive Offices and Research Center, 14 pages. An industry perspective study on coal tar's relationship with asphalt fumes and higher incidences of cancer in workers.

Controls

- OSHA News Release. OSHA Endorses Agreement to Reduce Asphalt Fumes (1997, January 9). Endorsement of non-regulatory agreement to reduce asphalt fumes from paving equipment.
- Explosion of an Asphalt Patching Truck. Ontario Ministry of Labor (1996, January), 3 pages. Describes an explosion that occurred while an operator was cleaning an asphalt patching truck. Control measures and precautions to prevent similar incidents are discussed.
- Engineering Control Guidelines for Hot Mix Asphalt Pavers, Part 1. New Highway-Class Pavers, NIOSH Pub. No. 97-105 (1997, January).
- Paver Engineering Control Ventilation Systems: New-Look Pavers. (1997) Asphalt Institute discussion of engineering control of asphalt fume from pavers.
- Paver Engineering Control Ventilation Systems. Asphalt Institute Executive Offices and Research Center, 5 pages.
- Asphalt Roofing. EPA, 12 pages. This is a PDF file containing the process overview on the manufacturing process of asphalt roofing materials and the emissions and controls associated with the industry.
- Hot Mix Asphalt Plants. EPA (1997, August 15). This site contains information on process overview of hot mix asphalt plants and the emissions and controls associated with each processes. The files can be accessed by either Zipped WordPerfect 5.1 files or PDF files.

Compliance

- **OSHA Standards**
  - 1910.1002, Coal tar pitch volatiles; interpretation of term. Asphalt is not covered by the coal tar pitch volatiles standard.

- **Preambles to OSHA Standards**
  - Air Contaminants - Section 7, VII. Feasibility and Regulatory Analyses. Because the scope of this

rulemaking is restricted exclusively to general industry, OSHA has determined that it is most appropriate at this time to defer regulation of asphalt fumes until the Agency has had sufficient time to address the complex health issues associated with this substance and to analyze the impact on the construction industry of establishing a PEL for this substance.

- **Standard Interpretations and Compliance Letters**
  - Natural or mined asphalts do not fall within the scope of the Coal Tar Pitch Volatiles Standard. (1983, May 26)
  - Petroleum asphalt removed from coverage under the Coal Tar Pitch Volatiles Standard. (1983, April 8)

Other

- References. This document includes a list of several, non-exhaustive, technical journal articles and government documents related to asphalt fumes.
- Asphalt Institute from an alphabetical listing of other safety and health internet sites

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Revision Date: 13 April 2000

Disclaimer

Asphalt Fumes

Over a half-million workers are exposed to fumes from asphalt, a petroleum product used extensively in road paving, roofing, siding, and concrete work. When hot asphalt is applied in a molten state, it generates toxic fumes. Workers exposed to asphalt fumes are at risk of developing headaches, rashes, cough, and possibly cancer. There is no OSHA standard for asphalt fumes. OSHA is developing an action plan to reduce worker exposures to this hazard but is not initiating rulemaking at this time.

Hazard Description

NIOSH estimated that over 500,000 workers were potentially exposed to asphalt fumes (1). OSHA estimated in 1992 that over 300,000 construction workers were exposed primarily in road-paving and roofing operations (2). Exposures vary considerably between different types of asphalt work (i.e. roofing vs. paving) and the different worker jobs (i.e. kettle operator vs. paver operator.) More research needs to be performed to determine and control important factors which cause increased worker exposures (i.e. application temperatures, type of equipment used, environmental conditions, workplace practices, and asphalt constituents.)

The acute effects of exposure to asphalt fumes include headache, skin rash, fatigue, reduced appetite, throat and eye irritation, and cough. Asphalt paving workers, for example, have reported breathing problems, asthma, bronchitis, and skin irritation (6). A recent study has shown that some of these effects occur at exposures of 0.5 to 1.3 mg/m3 (3).

Human studies have reported lung, stomach, and skin cancers following chronic exposures to asphalt fumes. However, these studies have been inconclusive, and the possible chronic effects to workers following exposures to asphalt fumes are areas of continuing investigations. One recent summary analysis of the available human studies found a nearly twofold increase in risk of lung and stomach cancer among roofers. Increased risks were also noted for other asphalt workers for lung, stomach, and bladder cancer, and for leukemia (4).

Laboratory studies have shown chemical extracts of asphalt fumes to have cancer-causing and mutagenic properties. For example, painting of asphalt extracts on mouse skin produces tumors that increase with dose (7). Other laboratory studies show DNA changes in mouse lung and skin cells (8) and in human fetal cells exposed to asphalt fume extracts (9). Urinalysis of exposed workers shows mutations in laboratory tests (10).

Current Status

OSHA does not have a standard for asphalt fumes although it proposed a 5 mg/m3 permissible exposure limit (PEL) in 1992 (5). OSHA's quantitative risk assessment estimated a significant risk of lung cancer among exposed workers at levels as low as 0.2 mg/m3.

The American Conference of Governmental Industrial Hygienists (ACGIH) currently recommends a Threshold Limit Value (TLV) of 5 mg/m3 as an 8-hour time weighted average. In 1977, the National Institute for Occupational Safety and Health (NIOSH) recommended a 5 mg/m3 15 minute short-term exposure limit. NIOSH is developing a new Criteria Document for asphalt fumes and expects to

The International Agency for Research on Cancer (IARC) found:

- "There is sufficient evidence for the carcinogenicity of extracts of steam-refined bitumens, air-refined bitumens and pooled mixtures of steam- and air-refined bitumens in experimental animals."
- There is limited evidence for the carcinogenicity of undiluted steam-refined bitumens and for cracking-residue bitumens in experimental animals.
- There is inadequate evidence for the carcinogenicity of undiluted air-refined bitumens in experimental animals.
- There is inadequate evidence that bitumens alone are carcinogenic to humans."

Rationale

Asphalt fume exposure meets several of the criteria for designation as an OSHA priority. In particular, the known and potential health effects are serious and a large number of workers are potentially exposed, especially considering high industry turnover rates. Although the human studies of workplace cancer have limitations, there is considerable experimental evidence of cancer risk. There is also evidence of acute health effects among workers exposed to asphalt fumes.

References

1. NIOSH; National Occupational Exposure Survey; 1981-1983.
2. Federal Register, vol. 57, no. 114, June 12, 1992. Air Contaminants; Proposed Rule. pp. 26001-26602.
3. Chase, R.M., Liss, G.M., Cole, D.C., and Heath, B. 1994. Toxic health effects including reversible macrothrombocytosis in workers exposed to asphalt fumes. Am. J. Indus. Med. 25:279-289.
4. Partanen, T. and Boffetta, P. 1994. Cancer risk in asphalt workers and roofers: review and meta-analysis of epidemiologic studies. Am. J. Indus. Med. 26:721-740.
5. Federal Register vol. 57, June 12, 1992. Air Contaminants; Proposed Rule. p. 26182-26190 deals specifically with asphalt fume.
6. Norseth T, Waage J, and Dale I. Acute Effects and Exposure to Organic Compounds in Road Maintenance Workers Exposed to Asphalt. Am J Ind Med; 1991; 20:737-44.
7. "Assessment of the Cocarcinogenic/Promoting Activity of Asphalt Fumes;" U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health; Contract 200-83-2612; December 1989.
8. Schoket B, Hewer A, Grover PL, Phillips DH; Covalent binding of components of coal-tar, creosote and bitumen to the DNA of the skin and lungs of mice following topical application. Carcinogenesis; vol. 9, no. 7, pp. 1253-1258; 1988.
9. Schoket B, Hewer A, Grover PL, Phillips DH; Formation of DNA Adducts in Human Skin Maintained in Short-Term Organ Culture and Treated with Coal-Tar, Creosote or Bitumen. Int. J. Cancer; 42:622-626; 1988.
10. Pasquini R, et al.; Urinary excretion of mutagens, thioethers and D-glucaric acid in workers exposed to bitumen fumes. Int Arch Occup Environ Health; 61:335-340; 1989.
11. International Agency for research on Cancer 1985. IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans: Polynuclear Aromatic Compounds, Part 4, Bitumens, Coal-tars and Derived Products, Shale-oils and Soots. Vol. 35 Lyon, France:IARC.

New Jersey Department of Health and Senior Services

HAZARDOUS SUBSTANCE FACT SHEET

Common Name: **ASPHALT FUMES**

CAS Number: 8052-42-4
DOT Number: NA 1999 (Asphalt)

RTK Substance number: 0170
Date: March 1989 Revision: May 1994

HAZARD SUMMARY

* **Asphalt fumes** can affect you when breathed in
* **Asphalt fumes** can irritate the eyes, nose, throat and lungs.
* Exposure to **Asphalt fumes** can cause severe irritation of the skin and may cause dermatitis and acne-like lesions.
* **Asphalt fumes** contain substances known to cause cancer.
* Hot **Asphalt fumes** are FLAMMABLE.
* Breathing **Asphalt fumes** can cause headache, dizziness and nausea.
* **Asphalt** is derived from petroleum. **Asphalt** and *Coal Tar Pitch* are different. If you are actually working with *Coal Tar Pitch* chemicals, refer to the *NEW JERSEY DEPARTMENT OF HEALTH HAZARDOUS SUBSTANCE FACT SHEET ON COAL TAR PITCH.*

IDENTIFICATION

Asphalt is a blackish-brown mass. **Asphalt fumes** are produced during the manufacture and heating of **Asphalt**, which is used for road building and roofing, and in rubber and adhesives.

REASON FOR CITATION

* **Asphalt fumes** are on the Hazardous Substance List because they are cited by ACGIH, NIOSH, DOT and NFPA.
* Definitions are provided on page 5.

HOW TO DETERMINE IF YOU ARE BEING EXPOSED

The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information and training concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard, 1910.1200, requires private employers to provide similar training and information to their employees.

* Exposure to hazardous substances should be routinely evaluated. This may include collecting personal and area air samples. You can obtain copies of sampling results from your employer. You have a legal right to this information under OSHA 1910.20.
* If you think you are experiencing any work-related health problems, see a doctor trained to recognize occupational diseases. Take this Fact Sheet with you.

WORKPLACE EXPOSURE LIMITS

ACGIH: The recommended airborne exposure limit is **5 mg/m^3**, which should not be exceeded at any time.

NIOSH: The recommended airborne exposure limit is **5 mg/m^3**, which should not be exceeded during any 15 minute period.

* **Asphalt fumes** contain substances known to cause CANCER in humans. There may be no safe level of exposure to a carcinogen, so all contact should be reduced to the lowest possible level.

WAYS OF REDUCING EXPOSURE

* Where possible, enclose operations and use local exhaust ventilation at the site of chemical release. If local exhaust ventilation or enclosure is not used, respirators should be worn.
* Wear protective work clothing.
* Wash thoroughly immediately after exposure to **Asphalt fumes** and at the end of the workshift.
* Post hazard and warning information in the work area. In addition, as part of an ongoing education and training effort, communicate all information on the health and safety hazards of **Asphalt fumes** to potentially exposed workers.

This Fact Sheet is a summary source of information of all potential and most severe health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

HEALTH HAZARD INFORMATION

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Asphalt fumes**:

* **Asphalt fumes** can irritate the eyes, nose, throat and lungs causing coughing and/or shortness of breath.
* Exposure can cause severe irritation of the skin and may cause dermatitis and acne-like lesions.
* Breathing **Asphalt fumes** can cause headache, dizziness and nausea.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Asphalt fumes** and can last for months or years:

Cancer Hazard

* **Asphalt fumes** contain substances such as *Benzo(a)pyrene* and *Dibenz(a,h)anthracene* that are known to cause cancer in humans.

Reproductive Hazard

* According to the information presently available to the New Jersey Department of Health and Senior Services, **Asphalt fumes** have not been tested for their ability to affect reproduction.

Other Long-Term Effects

* Long-term contact can cause skin pigment change which is made worse by sunlight exposure.
* Very irritating substances may affect the lungs. It is not known whether **Asphalt fumes** cause lung damage.

MEDICAL

Medical Testing

Before beginning employment and at regular times after that, for those with frequent or potentially high exposures, the following are recommended:

* Lung function tests.

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under OSHA 1910.20.

Mixed Exposures

* Persons exposed to *Coal Tar* rather than **Asphalt** (*petroleum*) **fumes** have different (and higher) risks. *CONSULT THE NJDOH HAZARDOUS SUBSTANCE FACT SHEET ON COAL TAR PITCH.*
* Exposure to sunlight may make skin effects of **Asphalt fumes** worse.
* Because smoking can cause heart disease, as well as lung cancer, emphysema, and other respiratory problems, it may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.

WORKPLACE CONTROLS AND PRACTICES

Unless a less toxic chemical can be substituted for a hazardous substance, **ENGINEERING CONTROLS** are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

In evaluating the controls present in your workplace, consider: (1) how hazardous the substance is, (2) how much of the substance is released into the workplace and (3) whether harmful skin or eye contact could occur. Special controls should be in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

In addition, the following is recommended:

* Specific engineering controls are recommended for this chemical by NIOSH.
* Refer to the NIOSH criteria document: *Asphalt Fumes # 78-106.*

Good **WORK PRACTICES** can help to reduce hazardous exposures. The following work practices are recommended:

* Workers whose clothing has been contaminated by **Asphalt fumes** should change into clean clothing promptly.
* Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to **Asphalt fumes**.
* Do not take contaminated work clothes home. Family members could be exposed.
* If there is the possibility of skin exposure, emergency shower facilities should be provided.
* On skin contact with **Asphalt fumes**, immediately wash or shower to remove the chemical. Non-volatile and/or waterless skin cleaners may be used.
* Wash any areas of the body that may have contacted **Asphalt fumes** at the end of each workday, whether or not known skin contact has occurred.

* Do not eat, smoke, or drink where **Asphalt** is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating or smoking.

PERSONAL PROTECTIVE EQUIPMENT

WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT. However, for some jobs (such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

The following recommendations are only guidelines and may not apply to every situation.

Clothing

* NIOSH recommends thermally-insulated gloves if working with hot **Asphalt**, long sleeve shirts, long cuffless trousers, and metal-toed safety shoes.
* All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

* Wear splash-proof chemical goggles and face shield when working with liquid, unless full facepiece respiratory protection is worn.

Respiratory Protection

IMPROPER USE OF RESPIRATORS IS DANGEROUS. Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing and medical exams, as described in OSHA 1910.134.

* Where the potential exists for exposure to **Asphalt fumes** or **vapors** over **5 mg/m^3**, use a MSHA/NIOSH approved full-facepiece respirator with an organic vapor cartridge and high efficiency particulate prefilter. More protection is provided by a half-mask respirator. Greater protection is provided by a powered-air purifying respirator.
* Be sure to consider all potential exposures in your workplace. You may need a combination of filters, prefilters, cartridges, or canisters to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals. A specific cartridge/canister approved for HYDROGEN SULFIDE may be necessary when working with hot **Asphalt**.
* If while wearing a filter, cartridge or canister respirator, you can smell, taste, or otherwise detect **Asphalt fumes**, or **vapors** or in the case of a full facepiece respirator you experience eye irritation, leave the area immediately. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter, cartridge, or canister. If the seal is no longer good, you may need a new respirator.
* Where the potential for high exposures exists, use a MSHA/NIOSH approved supplied-air respirator with a full facepiece operated in the positive pressure mode or with a full facepiece, hood, or helmet in the continuous flow mode, or use a MSHA/NIOSH approved self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode.

QUESTIONS AND ANSWERS

Q: If I have acute health effects, will I later get chronic health effects?
A: Not always. Most chronic (long-term) effects result from repeated exposures to a chemical.

Q: Can I get long-term effects without ever having short-term effects?
A: Yes, because long-term effects can occur from repeated exposures to a chemical at levels not high enough to make you immediately sick.

Q: What are my chances of getting sick when I have been exposed to chemicals?
A: The likelihood of becoming sick from chemicals is increased as the amount of exposure increases. This is determined by the length of time and the amount of material to which someone is exposed.

Q: When are higher exposures more likely?
A: Conditions which increase risk of exposure include dust releasing operations (grinding, mixing, blasting, dumping, etc.), other physical and mechanical processes (heating, pouring, spraying, spills and evaporation from large surface areas such as open containers), and "confined space" exposures (working inside vats, reactors, boilers, small rooms, etc.).

Q: Is the risk of getting sick higher for workers than for community residents?
A: Yes. Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. Because of this, and because of exposure of children or people who are already ill, community exposures may cause health problems.

The following information is available from:

New Jersey Department of Health and
Senior Services
Occupational Disease and Injury Services
Trenton, NJ 08625-0360
(609) 984-1863

Industrial Hygiene Information

Industrial hygienists are available to answer your questions regarding the control of chemical exposures using exhaust ventilation, special work practices, good housekeeping, good hygiene practices, and personal protective equipment including respirators. In addition, they can help to interpret the results of industrial hygiene survey data.

Medical Evaluation

If you think you are becoming sick because of exposure to chemicals at your workplace, you may call a Department of Health and Senior Services physician who can help you find the services you need.

Public Presentations

Presentations and educational programs on occupational health or the Right to Know Act can be organized for labor unions, trade associations and other groups.

Right to Know Information Resources

The Right to Know Infoline (609) 984-2202 can answer questions about the identity and potential health effects of chemicals, list of educational materials in occupational health, references used to prepare the Fact Sheets, preparation of the Right to Know survey, education and training programs, labeling requirements, and general information regarding the Right to Know Act. Violations of the law should be reported to (609) 984-2202.

DEFINITIONS

ACGIH is the American Conference of Governmental Industrial Hygienists. It recommends upper limits (called TLVs) for exposure to workplace chemicals.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is assigned by the Chemical Abstracts Service to identify a specific chemical.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes irreversible damage to human tissue or containers.

DEP is the New Jersey Department of Environmental Protection.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

HHAG is the Human Health Assessment Group of the federal EPA.

IARC is the International Agency for Research on Cancer, a scientific group that classifies chemicals according to their cancer-causing potential.

A **miscible** substance is a liquid or gas that will evenly dissolve in another.

mg/m^3 means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

MSHA is the Mine Safety and Health Administration, the federal agency that regulates mining. It also evaluates and approves respirators.

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NAERG is the North American Emergency Response Guidebook. It was jointly developed by Transport Canada, the United States Department of Transportation and the Secretariat of Communications and Transportation of Mexico. It is a guide for first responders to quickly identify the specific or generic hazards of material involved in a transportation incident, and to protect themselves and the general public during the initial response phase of the incident.

NCI is the National Cancer Institute, a federal agency that determines the cancer-causing potential of chemicals.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PEOSHA is the Public Employees Occupational Safety and Health Act, a state law which sets PELs for New Jersey public employees.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

TLV is the Threshold Limit Value, the workplace exposure limit recommended by ACGIH.

The **vapor pressure** is a measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.

>>>>>>>>>>>>>>>>> EMERGENCY INFORMATION <<<<<<<<<<<<<<<<<

Common Name: **ASPHALT FUMES**
DOT Number: **NA 1999 (Asphalt)**
NAERG Code: **130**
CAS Number: **8052-42-4**

Hazard rating	NJDHSS	NFPA
FLAMMABILITY	-	1
REACTIVITY	-	0
POISONOUS GASES ARE PRODUCED IN FIRE		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

FIRE HAZARDS

* **Asphalt pitch** is COMBUSTIBLE.
* **Asphalt fumes** are FLAMMABLE.
* The lighter, more liquid forms of **Asphalt** are FLAMMABLE (especially *Cutback*). The heavier, more solid forms may give off FLAMMABLE GASES when heated.
* Use dry chemical, CO_2, or foam extinguishers.
* POISONOUS GASES ARE PRODUCED IN FIRE, including *Hydrogen Sulfide* and *Sulfur Dioxide*.
* If employees are expected to fight fires, they must be trained and equipped as stated in OSHA 1910.156.

SPILLS AND EMERGENCIES

If **Asphalt** is spilled or leaked, take the following steps:

* Restrict persons not wearing protective equipment from area of spill or leak until clean-up is complete.
* Remove all ignition sources.
* Ventilate area of spill or leak.
* Absorb liquid **Asphalt** with sand or other non-combustible absorbent material and place in sealed containers for disposal.
* It may be necessary to contain and dispose of **Asphalt** as a HAZARDOUS WASTE. Contact your Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.
* If employees are required to clean-up spills, they must be properly trained and equipped. OSHA 1910.120(q) may be applicable.

FOR LARGE SPILLS AND FIRES immediately call your fire department. You can request emergency information from the following:

CHEMTREC: (800) 424-9300
NJDEP HOTLINE: (609) 292-7172

HANDLING AND STORAGE

* Prior to working with **Asphalt** you should be trained on its proper handling and storage.
* **Asphalt** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE)
* Heated or hot **Asphalt** can release toxic *Hydrogen Sulfide gas*.
* Store in tightly closed containers in a cool, well-ventilated area.
* Sources of ignition, such as smoking and open flames, are prohibited where **Asphalt** is used, handled, or stored in a manner that could create a potential fire or explosion hazard.
* Wherever lighter or liquid forms of **Asphalt** are used, handled, manufactured, or stored, use explosion-proof electrical equipment and fittings.

FIRST AID

In NJ, POISON INFORMATION 1-800-962-1253

Eye Contact
* Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids.

Skin Contact
* Remove contaminated clothing. Wash contaminated skin with soap and water.

Breathing
* Remove the person from exposure.
* Begin rescue breathing if breathing has stopped and CPR if heart action has stopped.
* Transfer promptly to a medical facility.

PHYSICAL DATA

Vapor Pressure: Unknown
Flash Point: 80°-400°F (26°C-250°C) (the more liquid the type of **Asphalt**, the lower the flash point).
Water Solubility: Insoluble

OTHER COMMONLY USED NAMES

Road Tar; Mineral Pitch; Petroleum Pitch

NEW JERSEY DEPARTMENT OF HEALTH AND SENIOR SERVICES
Right to Know Program
PO Box 368, Trenton, NJ 08625-0368
(609) 984-2202

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Volume 07, Issue 13
Friday, April 3, 1998

State Enviroment Committee Considers Asphalt Plant Moratorium

BY JASON BUSHY

COLCHESTER - The word "moratorium" was mentioned several times during the February 26 Department of Environmental Protection's public hearing concerning the proposed asphalt plant on the Colchester-Hebron border. It was also heard a week later when Colchester residents took Debra Green, an officer from the DEP, on a tour of the Fedus Associates' asphalt plant, under construction near Old Hartford Road. The word "moratorium" was pivotal to the testimony entertained by the state legislature's Environment Committee, which accepted input on a possible

asphalt plant moratorium, according to Sen. Eileen M. Daily, D-Westbrook, committee chairwoman. And it came up again at the Hebron Selectman's meeting on March 5.

But what is a moratorium? The American Heritage Dictionary describes it as "a deferment or delay of any action." The purpose of a moratorium in this case, according to Brian O'Connor of the legislature's Environment Committee, "is to delay the building of any asphalt plants for two years in order to study the issue more, and make sure they [asphalt plants] meet the proposed standards."

Originally, this action was proposed by Governor John G. Rowland. Those speaking at the Hebron town meeting and the DEP air pollution hearing mentioned that the governor has a personal interest in the issue - his mother lives near a proposed plant in Waterbury. But, in order for this moratorium to to into effect, it must first be passed into law. As of March 26 it had not

even been added to the official legislative agenda. "But it must be acted on by the deadline, which is May 6, " said O'Connor, referring to the fact that this is a short legislative session, which adjourns the first Wednesday in May.

Colchester residents are upset over the proposed asphalt plant, because they fear it will pollute the air and water as well as bring the property values down throughout the town. Mark Gross is worried that the plant may adversely affect the wildlife sanctuary across the street from the

proposed site. "I have every type of wild bird that exists in Connecticut on my property," mentioned Gross, "and other animals including red fox and white-tailed deer. There are at least 24 different species just on my property."

Although most of Colchester's residents have only recently become aware of the asphalt plant issue, it's actually been around for a number of years. The area on the border between Colchester and the Amston area of Hebron was first zoned industrial back in the 1970's. Leo Fedus & Sons

construction proposed the plant in 1989; Colchester denied the permit, so lawsuits and appeals followed. In 1992, Colchester went to the state supreme court and obtained a decision making it impossible for the applicant to run the plant without passing a series of conditions. Fedus began construction under a temporary permit, and are hoping to convert it to a permanent permit in the coming months.

It wasn't until the end of 1997 that the majority of Colchester's citizens learned how close this perceived danger was. Although they've started late, these residents have stressed at recent meetings that they will continue to fight this battle until it's over.

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Volume 07, Issue 23
Friday, June 12, 1998

Can Colchester Residents Exhale?

Asphalt Bill Signed By Gov. Rowland

BY CAROLANN MCGOWAN

WATERBURY - Because there is so much concern and many unanswered questions regarding health hazards related to asphalt plants, Gov. John G. Rowland signed a bill last week that will keep the plants at least a third of a mile from waterways, homes, and other public buildings.

Rowland signed the Buffer Zone Act, which will directly impact proposals to build plants in Colchester, Waterbury and Bridgeport, June 1 at Frankies Hot Dog stand in Waterbury with approximately 100 concerned citizens and many government officials standing by. He explained how the act gives about 1,600 yards of added protection.

Chris McLaughlin, the owner of the proposed Colchester plant, could not be reached for comment but will reportedly pursue a lawsuit based on the decision.

The act says that no asphalt plant can be built within one third of a mile in linear distance to any hospital, nursing home, school, any area of critical environmental concern, watercourse or area occupied by residential housing.

Residents of Colchester and surrounding towns have been holding their breath for the past six months awaiting legislation to halt construction of the Fedus Associates, LLC, asphalt plant located at 631 Old Hartford Road. While the proposed plant is zoned for industrial use, it borders Jeremy River, a farm, and

several homes.

In signing the bill, Rowland suggested the Fedus Associates' property be used for something else.

"I know in Colchester it has been suggested that millions of dollars have been spent buying and procuring the property, but perhaps there's another use for that piece of property," said Rowland. "My concern is the health of the children. I'm not concerned about the particular business, there (are) no guarantees in life about business investments, and we have to take the appropriate measures to save children."

Rowland said the 37 asphalt plants currently operating in Connecticut are enough to meet the demands of road and highway construction. "So the question becomes, 'Do we have enough asphalt plants right now?' and I understand that we do," he said. "...Many groups may argue that if there is a greater need, perhaps we should build those in areas that are away from residential areas. That's why the Buffer Zone legislation is so very important today."

Rowland read and explained the Buffer Zone Act and the importance of the act not only for the short term but "long term for our children's homes."

Al Ouellette, president of Colchester Concerned Citizens, and state Rep. Linda Orange of the 48th District were in Waterbury to witness the signing.

"This one third mile citing act assures people quality of life so something does not show up at your back door or waterway," said Ouellette, who wrote the wording and gave it to Orange in July. "They worked very hard and they moved it through the system," he said of Orange and Sen. Eileen Daily, who also supported the bill.

A moratorium passed earlier this year prohibits any construction of asphalt plants for two years. "One of the reasons they passed the moratorium is because they realized it's not only what goes up in smoke that's the problem," said Ouellette. He referred to residue and the dumping of asphalt into trucks.

Colchester First Selectman Jenny Contoise was cautiously optimistic about the act. "Based on the governor's signing of the act, it will have an impact on the plant in Colchester. The act takes effect upon signing so it will affect this location," she said. "I don't know what the developer's plans are. With the DEP hearing, we're in limbo right now while everything's being evaluated."

Tony Koenig, owner of Timberlog Building Systems, Inc., a

business located near the proposed Colchester plant, was satisfied with the decision. "I'm pleased as a business owner," he said. "I appreciate the support of Senator Daily and Linda Orange. I compliment the governor of Connecticut that he supports the importance of the environment, and his concern and understanding of the impact this has on residential property values." He continued that Al Ouellette worked very hard on this and he deserves a lot of credit.

Ouellette and Orange both said that this act does not affect existing asphalt plants. "We don't know if any of the existing plants are safe enough until the (Federal Environmental Protection Agency) finishes their environmental study," said Ouellette. It is not clear how long the EPA investigation will take.

Depending on the outcome of the EPA investigation, "We may find we want to make some changes to the asphalt plants we have across the state," said Rowland.

Rowland commended the team of legislators from the three towns that worked to affect the legislation. "With the combination of people from Colchester, Bridgeport and Waterbury, this was a wonderful working relationship," he said.

Orange said working with officials from the other towns helped get the act passed. "Its not the bill that we wrote, it was the language that we wrote. The original bill died in the committee. With the delegation which is Colchester, Waterbury and Bridgeport, we were able to take this language, this Buffer Zone language and amend it to a bill. ...With the support of my colleagues we were able to pass it," Orange said.

Sen. Lee Scarpetti and Sen. Chris Caruso, both of Bridgeport, were also instrumental. "Timing was of the essence here," said Scarpetti. "My people live right near Long Island Sound."

Sen. Caruso added, "We were very involved when the bill went to the house, we lobbied, brought it out onto the floor. ...There was a real coalition between the Senate and the House of Representatives to make this happen."

Caruso talked about this day being a great day for the average people in the state who work every day to make a living for their families. "They fought some major developers and people who would have encroached upon their neighborhoods in such a negative way, so today is a victory for all the people in the state," said Caruso.

Kathleen O'Dea, a resident of Waterbury who attended the

signing, said, "I support the bill for the buffer zone giving a one third of a mile distance from the asphalt plants." She later commented, "It would be a good idea for the DEP and EPA to be more accessible to assist these types of businesses ahead of time. It could prevent some of these problems."

James Latimer of Waterbury said, "The governor shows that he's very sensitive to the needs of the people of Connecticut. He's been great."

Another resident of Waterbury, Mike Noonan said of the proposed plant in his town, "If the chiminey fell off, it would hit my house. That's how close it is to my house."

HOME | SEARCH

REPORT ON BILLS FAVORABLY REPORTED BY COMMITTEE

COMMITTEE: Environment

File No.:
Bill No.: SB-597
PH Date: 03/11/98
Action/Date: 03/16/98
Change of Reference: JFS to FLOOR

TITLE OF BILL:

AN ACT CONCERNING THE SITING OF ASPHALT BATCHING FACILITIES.

SPONSORS OF BILL:

Governor
Environment Committee

REASONS FOR BILL:

To set a two year moratorium on the issuance of aphalt batch plant permits until further study of the environmental impacts of such plants are studied. (The original language of RSB-597 was stricken from the bill and inserted into Substitute Senate Bill 414 as Section 3. The Governor's moratorium language is now the substitute language for SB-597.

RESPONSE FROM ADMINISTRATION/AGENCY:

Department of Environmental Protection, Jane Stahl, supports the Governor's moratorium proposal. The proposal contains two issues that are critical for the Department, including a conclusion date for a moratorium and clear impacts on pending applications before the Department. In addition, they request that any moratorium language provide the Department with specific direction as to the environmental impacts they are to study during the moratorium.

Rep. Linda Orange, 48th District, supports bill because it provides a buffer zone between asphalt batching facilities and certain sensitive areas. She is also concerned with the amount of pollutants emitted into the air by the plants and the increased traffic flow which will increase the risk of accidents.

NATURE AND SOURCES OF SUPPORT:

Mayor of Waterbury, Phil Giordano, supports bill and the Governor's moratorium language

Alderman Town of Waterbury, Larry Butler, supports bill and Governor's moratorium language.

For the Birds, Mark Gross, states if the proposed asphalt plant being built in Colchester is allowed to proceed with total disregard to environmental/wildlife concerns, it will lead to a catastophic chain of events.

ConnPirg, Steve Gurney, supports the establishment of a buffer zone for asphalt batching facilities as a precautionary measure to

protect public health and the environment.

Town Manager of Hebron, Robert Lee, supports bill and its proposal to provide a buffer zone in environmentally sensitive areas and also would like the Committee to pass the Governor's moratorium language.

Toxic Action Network, Merc Pittinos, supports legislation to provide a buffer zone between asphalt plants and sensitive areas like hospitals, nursing homes, schools, areas of critical environmental concern, watercourses, and areas occupied by residential housing.

Dr. Laura Green, submitted testimony from the Boston Board of Health and the Uxbridge, MA testimony detailing the health effects associated with asphalt batching plants. Asphalt batching plants pose serious health risks to the citizens of Connecticut.

First Selectman of Colchester, Jenny Contois, supports the buffer zone language and the Governor's moratorium language. The environmental impacts and health risks are of grave concern to the citizens of Colchester.

The following people submitted testimony in support of the Governor's moratorium language and the original language of RSB-597, which provided a buffer zone of 1/3 of a mile in linear distance from any hospital, nursing home, school, area of critical environmental concern, watercourse, or area occupied by residential housing. These individuals are concerned about the health risks and environmental impacts posed by the pending asphalt plants.

Robert Washburn, Colchester
Al & Mary Lou Ouellette, Colchester
Elaine Denze, Waterbury
Kathleen McNamara, Waterbury
Lawrence DePillo, Waterbury
John & Rosemary Percell, Bridgeport
Chris Savitski, Amston
Theodore Savitski, Amston
Lori Salinger, Hebron
Steven Salinger, Hebron
Richard Twombly, Hebron
Joe Fuimara, Amston
Bray Family, Hebron
Mark Pappalardo, Colchester
Peter & Pamela Franeski, Amston
Roger Kirkpatrick, Colchester
Lorie Schappert, Amston
Mary Jo Hogan, Colchester
George & Monique Gonsalves, Hebron
William Garrison, Hebron
Michael Sforza, Marlborough
Gerald Baker, Colchester
Frank, Jeannette & Austin Fetzer, Amston
Barbara Moroch, Colchester
Kara Willette, Marlborough
Holly Malicki, Colchester
Lisa Smith, East Hampton
Susan Hubbell, Colchester
John & June Mainella, Colchester
Patrick Derosier, Middletown
Suzanne & Steven Tercyak, Middlefield
Margaret Coyle, Killingworth
Piper Forster, Portland

Nancy Ingalls, East Haddam
Wayne & Maryann Rivera, Colchester
Ciel Dehoreto, Colchester
Kathleen Sullivan, Colchester
James Milardo, Colchester
Janet Deneen, Colchester
John Gagnon, East Hampton
Jodi Cooney, Middletown
Jennifer Peugny, Middlefield
Donald Wagner, Clinton
Kimberly Gagnon, East Hampton
Lori Gagnon, Manchester
Francis Yeau, Portland
Lorrie Korn, Durham
Jessie Logudice, Haddam
Wayne Gagney, Cromwell
Leslie Brooke, Ivoryton
Diana Garid, Rocky Hill
June Fuller, Higganum
Ruth Dengler, Chester
Christina King, Colchester
Jessica Trusz, Colchester
Paulette Bacon, Middletown
Rita Gromala-Schoenborn, Colchester
Brian Hariskevich, Bridgeport
Peter DiTomasso, Colchester
James Latimer, Waterbury
Robert Silvestri, Waterbury
Tammy Wolfe, Colchester

NATURE AND SOURCES OF OPPOSITION:

Contractors Supply of Waterbury, Franklin Pilicy, opposes bill because it seeks to ban an industry without allowing a review of how a particular facility would affect human health and the environment. There is no scientific basis for this legislation.

Fedus Associates, Harry Heller, oppose bill and think it is an ill-advised and inappropriate overreaction to environmental concerns which have been raised with respect to the manufacture of bituminous concrete in recent permitting proceedings, including Fedus's proposed Colchester facility. There is no empirical data to support this.

Brian O'Connor 4/2/98

*Attached voting tally sheet

Reported by Date

TOP

January 27, 1999

Asphalt Fumes We live 2 blocks from an asphalt plant. We have been told that the fumes from this plant are not harmful to us, but we have never had the health problems we have now since the plant has been in operation. Are there any health risks that we should be aware of?

Sun ONE
The Gainesville Sun

Partly Cloudy 88°

Friday, April 30, 1999

Woman gives premature birth after car accident

By CINDY SWIRKO
Sun staff writer

A woman who was 6 1/2 months pregnant rear-ended a school bus loaded with 31 youngsters north of Newberry Thursday morning, causing minor injuries, a premature birth and renewed concerns about bus safety on a crowded U.S. 41.

Alachua County Fire Resue members remove Brook Curtis Thursday from her car after she hit a stopped school bus on U.S. 41 near Newberry.
Sun photo by Dede Smith.

Rescue personnel spent 45 minutes getting Brook Curtis, 20, of Newberry, from her car. She gave birth several hours later at Shands at the University of Florida and was in stable condition. The infant was in the intensive-care unit.

Meanwhile, other bus drivers who arrived at the scene prayed. Parents who live near the bus stop, which is at the crest of a hill, said they have for years asked the state Department of Transportation for signs along the road warning motorists of the bus stop.

"There needs to be some sort of warning devices out there like the signs - 'School bus stop ahead,' " said Tina Polsen, who lives by the bus stop. "For 12 years I have said, 'Please, put signs out.' I got told because there was no need and that the only way signs would be put there is if an accident happened. Well, now an accident has happened."

The accident occurred at 7:10 a.m. on U.S. 41 at NW 32nd Avenue about a mile north of Newberry, said the Florida Highway Patrol.

Bus driver Virginia Hines and 31 students were southbound on U.S. 41 and was stopped to pick up students. Curtis drove into the back of the bus with her 1981 AMC car.

Four students complained of minor injuries. Tonya Adams, 16, of 28627 NW 46th Ave, and brother Michael Adams, 15, were taken to North Florida Regional Medical Center for X-rays.

Alachua Fire Rescue spokesman Justin Lagotic said crews used a metal-cutting tool to free Curtis from her car.

Sun ONE
The Gainesville Sun

Archives: April 30, 1999

Woman gives premature birth after car accident

By CINDY SWIRKO
Sun staff writer

A woman who was 6 1/2 months pregnant rear-ended a school bus loaded with 11 youngsters north of Newberry Thursday morning, causing minor injuries, a premature birth and renewed concerns about bus safety on a crowded U.S. 41.

Rescue personnel spent 45 minutes getting Brook Curtis, 20, of Newberry, from her car. She gave birth several hours later at Shands at the University of Florida and was in stable condition. The infant was in the intensive-care unit.

Alachua County Fire Rescue members remove Brook Curtis Thursday from her car after she hit a stopped school bus on U.S. 41 near Newberry.
Sun photo by Dale Smith

Meanwhile, other bus drivers who arrived at the scene prayed. Parents who live near the bus stop, which is at the crest of a hill, said they have for years asked the state Department of Transportation for signs along the road warning motorists of the bus stop.

"There needs to be some sort of warning devices out there like the signs 'School bus stop ahead,'" said Lisa Polson, who lives by the bus stop. "For 12 years I have said, 'Please, put signs out.' I got told because there was no need and that the only way signs would be put there is if an accident happened. Well, now an accident has happened."

The accident occurred at 7:10 a.m. on U.S. 41 at NW 32nd Avenue about a mile north of Newberry, said the Florida Highway Patrol.

Bus driver Virginia Hines and 11 students were southbound on U.S. 41 and was stopped to pick up students. Curtis drove into the back of the bus with her 1981 AMC car.

Four students complained of minor injuries. Dawn Adams, 16, of 28027 N.W. 46th Ave., and brother Michael Adams, 15, were taken to North Florida Regional Medical Center for X-rays.

Alachua Fire Rescue spokesman Justin Lugone said crews used a metal cutting tool to free Curtis from her car.

"Her dash was under the bus. Her entire hood was under the bus and the steering wheel fell into her lap and pinned her to her seat," Lagotic said. "She was conscious during the entire incident. She was very, very lucky. It could have been tremendously worse."

Curtis was rushed to Shands, where she gave birth a short time later. Curtis said she was 26 weeks pregnant.

FHP charged Curtis with careless driving.

The bus transported students to Newberry elementary and high schools and Oak View Middle School.

Oak View Assistant Principal Donna Jones said district nursing supervisor Pat Hughes examined the other students on the bus. Jones said the students handled the situation well.

"Pat Hughes responded immediately and was in our office about three hours. She talked to the kids involved and answered parent and student concerns," Jones said. "The kids responded very well to the accident."

The accident comes at a time when the issue of installing seat belts on school buses is under consideration. State Rep. Cynthia Chestnut, D-Gainesville, has again filed legislation to mandate seat belts on new buses purchased after 2000.

School district transportation Director Jack Shelton said a federal study on the effect of bus seat belts is under way. He added that the lack of injuries in Thursday's accident illustrates how well buses are made.

A school bus was hit several years ago on U.S. 41 south of Archer when one Watson Construction Co. dump truck rear-ended another, knocking it into the bus. Residential development has grown significantly in the Jonesville and Newberry areas in recent years as more homeowners flock to a rural setting and lifestyle. The area is also home to several limerock mining operations and construction and demolition debris dump sites, which both generate substantial truck traffic. Both Shelton and FHP Lt. Keith Gornto said U.S. 41 is not an especially dangerous road. Gornto said the problem is too many drivers, and impatient and careless drivers.

"The roads are designed with safety in mind," Gornto said. "What's happening all over Florida is that we get too saturated for the design of the road. You couple that with impatience, and then we have problems." "School buses have to stay at a certain speed and they've got to stop and start. People get impatient behind a school bus and they think it's worth a chance to pass it. We could tie a patrol car to the back of a school bus and it wouldn't make a difference."

Back to SunONE

"Her daughter was under the bus. Her entire head was under the bus and the steering wheel fell into her lap and pinned her to her seat," Longoria said. "She was conscious during the entire incident. She was very, very, very hurt. It could have been tremendously worse."

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May 13, 1998

One dead, 13 injured in crashes

By BRADLEY KEOUN
Sun staff writer

Dense fog was partly to blame for two crashes that killed one man and injured 13 Levy County students on their way to school.

In west Alachua County, a Bronson man died after his 1991 Camaro slammed into a dump truck that had stopped behind a school bus at about 7:35 a.m. Neither the truck's driver nor any of the children on the school bus were injured.

About 10 minutes later, on U.S. 41 about 1.5 miles south of Williston, a bus carrying 52 students crashed into an oncoming pickup truck. Paramedics treated 13 students at the scene for minor scrapes and bruises, troopers said.

Bus driver Kelly Warhurst, 42, Morriston, was driving in heavy fog and failed to see slower traffic ahead until it was right in front of her. She swerved to the left and collided with an oncoming Chevrolet truck. Troopers cited Warhurst for driving too fast for the road conditions. Timothy Harding, 17, of Williston, driver of the pickup truck, was not injured.

The driver in the first crash, Antonio Lee Hall, 27, was killed instantly.

Twenty-foot skid marks trailing his Camaro's final resting place showed that Hall apparently hit his brakes before the crash. But the car's speedometer was frozen at 59 mph.

"The skid marks indicate that he did see the truck and took some evasive action," said Florida Highway Patrol Capt. Silvester Dawson. "However, given his speed, he did not have enough distance to bring his vehicle to a stop or slow it to the point where it would have caused less severe injuries."

Troopers reported heavy fog there shortly after the crash.

At 7:34 a.m., Alachua County school bus No. 9506 stopped in front of 1828 SW 266th St. to pick up a student. About 65 students from Newberry High School and Oak View Middle School were already aboard, said Alachua County School Board Transportation Manager David Deas.

A car stopped behind the school bus, and a Watson Construction Co. dump truck filled with dirt stopped behind the car.

Hall's car slammed into the undercarriage of the dump truck with such impact that it knocked the truck's rear end out of place.

"I've seen (crashes) bend up some scrap metal (underneath a truck), but I've never seen it actually drive the running gear forward," said Jim Bacom, a Watson maintenance supervisor.

Hall was dead in the crumpled Camaro when paramedics arrived. Dirt from the dump truck had spilled all over the crash scene.

Dawson said Hall was not wearing a seat belt and that he likely would have survived if he had buckled up.

Witnesses at the crash scene said it was lucky the dump truck was there. Otherwise, they said, the Camaro might have slammed into the school bus.

Bus driver Alyssa Wood apparently didn't see or hear the Camaro's impact because it was behind the large, noisy dump truck. She drove away and learned of the crash only after Alachua County deputies notified her later.

Dawson said it may have been fortunate the students didn't see the crash or the corpse.

"You never want kids to see any type of crashes such as these," he said. "A lot of them have never seen serious injuries or people who have received major cuts. ... Sometimes there are long-term psychological effects."

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Oct 28, 1997

Construction debris landfill plan is rejected

By RON MATUS
Sun staff writer

Plans for a landfill near Newberry that would take land-clearing debris have been rejected by state environmental officials.

Builder Larry Watson did not provide "reasonable assurances" about groundwater and drinking water protection, stormwater drainage and other concerns for a high-recharge area, officials said.

A denial of Watson's application was filed this week by the Department of Environmental Protection office in Jacksonville.

The facility would have allowed for disposal of roots, stumps, branches, leaves and soils. Watson planned it for the same 158-acre parcel east of County Road 337 that he wanted to build a construction and demolition waste landfill on several years ago.

That plan was fought by area residents and the city of Newberry, and the case is on appeal.

Ernie Windsor, projects manager for Watson Construction Co., said the company was not surprised by DEP's denial but had not made a decision whether to appeal or re-file.

But Watson will be back, said David Morris, a leading opponent of the recent landfill plans. He called the land-clearing debris landfill a "stepping stone" to the more worrisome construction and demolition landfill.

"Me and (Watson) been dancing for 4-1/2," said Morris, "and we ain't through dancing yet."

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"Me and Watson been dancing for 4-1/2," said Morris, "and we want through dancing yet.

August 8, 1996

Truckers find selves in political pothole

By Fred Hiers
Special to the Sun

NEWBERRY -- Watson Construction trucks hauling sand on County Road 337 from the company's disputed waste site near Newberry may soon encounter some political speed bumps.

The city's commissioners asked Alachua County Commissioners Wednesday morning to enforce the road's 20-ton weight restrictions -- essentially keeping the company's trucks off the narrow, two-lane road that runs south of Newberry into Levy County.

Fueling the debate between Newberry City Hall and Watson Construction and prompting the meeting between city and county officials was how Watson's trucks were violating the road's weight restrictions and shortening its life span.

County Public Works Director Ed Culpepper warned that the road will quickly deteriorate under the strain of the 35-ton sand-carrying trucks and that state officials have failed to enforce Florida's laws.

"The primary issue has been one of enforcement and it's been one of the most frustrating experiences that I have been through," Culpepper said.

Weight restrictions were put in place in 1980 and are nothing new, Culpepper said.

But, he said, the state's Motor Carrier Compliance Office failed to enforce the law after Levy County removed weight restriction signs along their portion of the road to warn trucks.

To avoid having to prematurely repave the six-mile stretch of road in about five years, Culpepper on Wednesday proposed a plan that would take the Motor Carrier Compliance Office and Levy County out of the picture altogether.

With Newberry officials' support, Culpepper proposed to Alachua County Commissioners that the Sheriff's Office be given portable scales to weigh the trucks. In addition, he proposed a new section of road be built along CR 337 so trucks too heavy can safely turn around. The cost of the two items combined: about $40,000, Culpepper said.

Watson officials maintained their truck traffic is an issue only because of growing opposition to their borrow pit. The city of Newberry approved a special-use permit for the operation in May 1993, but an ongoing legal battle has ensued since centering on environmental and land-use concerns.

"This road business is just something to stop the hauling of dirt out of the site," said Dan Whitehurst of V.E. Whitehurst and Sons Inc., which owns the bulk of the waste site with Watson Construction. "It's all a political game that they're playing. It's got nothing to do with the road."

Enforcement of the weight restriction would not stop all heavy traffic. Residents and local farmers who traditionally haul trees and crops during a short period each year can obtain a permit to exceed

the legal limit.

Whatever the motivation behind the weight restriction enforcement, county commissioners seemed receptive to the plan, saying they would discuss its financing during their Tuesday meeting and probably vote on it.

"We've spent a lot of time and energy talking about how much more taxpayers' money would be spent on enforcement, but the whole problem is a company that is willfully breaking the law," said Commission Chairman Margaret Eppes. "This is what its all about -- somebody breaking the law."

What has angered area residents is what many call the blatant violation of the law by Watson construction.

"They just go out there and flagrantly violate the law by running their trucks on a road that they should not be on," said Mike Garson, one of about 100 residents who came to the meeting.

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August 5, 1997

Watson contests overweight tickets

By DOUG MARTIN
Sun staff writer

Watson Construction Co.'s sandlot south of Newberry continues to generate games of legal hardball.

The two-year-long dispute centers on the company's right to haul fill dirt on County Road 337 in trucks exceeding the 20-ton limit Alachua County set for the road.

The latest skirmish concerns tickets written by a Florida Highway Patrol corporal to three Watson drivers on May 16.

The tickets were for failure to drive in a single lane and failure to obey traffic control devices, namely the signs limiting trucks to 20 tons on the county road.

The 18-foot-wide road is too narrow for the trucks to pass each other without veering onto the shoulder.

Cpl. Dan Campbell ordered the trucks to drive to a scale to be weighed, finding they were each 25,000 pounds over the road's weight limit.

In a hearing two weeks ago, the company contested the tickets, saying the county has improperly imposed weight restrictions.

Jeff Braswell, an attorney for Watson, also challenged the right of FHP to enforce weight restrictions, a task legally assigned to the Florida Department of Transportation.

Braswell said the corporal failed to weigh the trucks properly and engaged in selective enforcement.

FHP Capt. Silvester Dawson said he has asked for a report on the circumstances surrounding the citations.

"We're not going to turn a blind eye to motor vehicle violations," Dawson said.

Dawson has ordered troopers not to issue any more overweight citations until the legal challenge is resolved.

"We're just going to see what happens," Dawson said. "If there is an appeal, then our legal folks will get involved."

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Resolution has been delayed further because County Judge Phyllis Kotey recused herself from the case because the company recently was hired to clear land for her family's home. County Judge Aymer "Buck" Curtin has taken over the case.

On another front in the dispute, the company has tendered an offer to settle the city of Newberry's lawsuit against it.

Scott Walker, Newberry city attorney, said the company sent a letter to Mayor Grady Herzog offering to pave and widen parts of SW 46th Avenue in exchange for using the road that is in the city limits.

The city has prevented the trucks from using the street by barricading the company's exit.

Braswell said the lack of response from the city indicates the offer was not good enough to settle the suit.

County Commissioner Penny Wheat said she recently toured the area and saw the damage on the road caused by the trucks exceeding the weight limits.

"(Watson) should be required to repave the entire road," Wheat said.

The county considered an ordinance to enforce the weight restrictions through the Alachua County Sheriff's Office, but abandoned the idea in December.

The controversy began in 1993 when the city of Newberry approved Watson's land-use permit for a construction waste dump at the site.

Angry residents threatened a recall vote of city commissioners, who then voted to rescind the permit. The city joined with the group to challenge the proposed state permit.

The Florida Department of Environmental Protection denied the permit in December. The company has appealed the denial to the 1st District Court of Appeals in Tallahassee.

"We feel like we're being singled out because it is politically expedient to shut up a minority that is protesting," Braswell said.

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March 27, 1997

Dixie ambulance hits rock truck, injuring three

By DOUG MARTIN
Sun staff writer

NEWBERRY - A Dixie County ambulance rushing a patient to a Gainesville hospital Wednesday afternoon slammed into the back of a rock truck on Newberry Road and overturned, critically injuring two paramedics and an already critical patient.

The 2:10 p.m. crash in front of Canterbury Florida's Equestrian Showplace at 23100 Newberry Road, shut down traffic on the busy road for three hours as crews spent an hour cutting the ambulance driver, Alan Edward Potter, 40, of Cross City, from his smashed vehicle.

In the rear of the ambulance, the patient, Loretha Cobb, 66, of Cross City, and an emergency medical technician, Kevin E. Dowell, 23, also of Cross City were injured but not trapped.

The driver of the truck, George Wesley, 54, of High Springs, was uninjured. The rock truck, which was carrying no cargo, was pulling an empty trailer.

A helicopter flew Potter to Shands at the University of Florida, where he was listed in critical condition late Wednesday.

Officials feared the driver might die, but the veteran paramedic appeared to be winning the fight against his grave injuries.

"He's got a strong heartbeat," said FHP Cpl. Ann Hall, the crash investigator.f-z□

Potter worked as a Dixie County paramedic for four years before being hired in Levy County in 1995. Last fall, Potter returned to Dixie County and has worked part-time since then.

Alachua County Fire Rescue ambulances carried Dowell to Shands at AGH, where he was listed in serious condition, and Cobb to Columbia North Florida Regional Medical Center, where she was listed in critical condition.

Dowell had just moved from a part-time to a full-time position with Dixie County on March 1. Dixie County records show he is close to becoming a paramedic.

Lt. Paul Shinholster of the Florida Highway Patrol said the ambulance was traveling east on Newberry Road at 60 mph with its lights and sirens on.

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The 2:10 p.m. crash in front of Canterbury Manufactured Housing on 23100 Newberry Road shut down traffic on the busy road for three hours as crews spent an hour cutting the ambulance driver, Alan Edward Porter, 40, of Cross City, from his smashed vehicle.

In the rear of the ambulance, the patient, Jeremy Cobb, 26, of Cross City, and an emergency medical technician, Kevin L. Dowell, 23, also of Cross City, were injured but not trapped.

The driver of the truck, George Wesley, 34, of High Springs, was unhurt. The rock truck's load was carrying no cargo, was pulling an empty trailer.

A helicopter flew Porter to Shands at the University of Florida, where he was listed in critical condition late Wednesday.

Officials feared the driver might die, but the veteran paramedic appeared to be winning the fight against his grave injuries.

"He's got a strong heartbeat," said EMT Cpl. Ann Hall, the crash investigator.

Porter worked as a Dixie County paramedic for four years before being hired in Levy County in 1993. Less than a month ago, Porter returned to Dixie County and his wife's part-time clinic there.

Alachua County Fire Rescue ambulances carried Dowell to Shands at Alachua, where he was listed in serious condition, and Cobb to Columbia South Florida Regional Medical Center, where she was listed in critical condition.

Dowell had just moved from a part-time to a full-time position with Dixie County on March 1. Dixie County records show he is close to becoming a paramedic.

Lt. Paul Shufelberger of the Florida Highway Patrol said the ambulance was traveling east on Newberry Road at 60 mph with its lights and siren on.

An eastbound White Construction truck pulled onto the south shoulder, causing the ambulance driver to think the truck was allowing the ambulance to pass, Shinholster said.

Instead, the truck's driver pulled back in the road as if to make a left turn or a U-turn, Shinholster said.

The ambulance crashed into the rear of the truck with a thundering impact.

Gary Plummer, an agriculturalist who owns a pasture next to the crash site, was close by in woods on his property when he heard what sounded like a big explosion.

Plummer ran out of the forest to find the overturned ambulance on the south side of the road and the rock truck smashed into a wooden fence on the horse farm's property on the north side of the road.

"I saw a truck tire running down the highway toward Gainesville," Plummer said.

Sgt. Alan Baxter of the Alachua County Sheriff's Office was in the area because of the Florida Rock cement plant ground-breaking and responded to the scene first.

Baxter, a 19-year-veteran traffic supervisor, cut his fingers on broken glass and twisted metal trying to free Potter from the obliterated cab.

Baxter moved on to the rear of the vehicle, keeping Dowell and Cobb from moving in the jumbled mess of medical supplies and life-support equipment.

"I was helping to calm them," Baxter said.

Deputy Billy Ray Hunter came along afterward and sprayed a fire extinguisher on flames in the engine compartment.

Wesley, a truck driver for 20 years with five years at White Construction, disputed the Florida Highway Patrol version of events, claiming his truck never left the road and made no attempt at turning.

"I was going straight down the road," Wesley said. "I don't know whether he came on the grass or what."

Troopers took a blood sample from Wesley for blood alcohol testing.

Charges in the accident are pending.

Shinholster said the heavy traffic mix of trucks and passenger vehicles on busy Newberry Road has made it one of the county's most dangerous roads.

Ambulance hits rock truck, injuring three

Sun Seaborn Water Construction truck pulled onto the south shoulder, causing the ambulance driver to think the truck was allowing the ambulance to pass, authorities said.

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Thursday, July 27, 2000

Brothers' lives change forever after accident

By KAREN VOYLES
Sun staff writer

CROSS CITY -- Sometimes we don't get to pick our paths. Sometimes they are chosen for us. Sometimes they come out of nowhere and target people untrained to deal with them.

People like Danny Potter.

Equipped with a high school diploma and the knowledge he gained operating his own welding shop, Potter, 55, is now in his unplanned second career -- guardian, caretaker and near-constant companion for his kid brother.

That brother is Alan Potter, 45, the Dixie County paramedic who suffered a traumatic brain injury in a collision with a rock truck more than three years ago.

Back when this all started, Danny Potter was living in Dixie County happily running his welding business. His mother, Evelyn, lived nearby. Danny's three sisters had moved but were in frequent contact with the family.

Alan also lived nearby and worked with

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Danny on his days off as a paramedic. He was filling time as a welder until he could begin registered nursing classes later in the year. The brothers were both divorced and found themselves with time on their hands at night and on weekends so they often watched ball games on television at their mom's house.

If something got broke, Danny was the brother who knew how to fix it. If somebody got hurt, Alan was the brother who knew how to help.

This all changed at 2 p.m. on March 26, 1997.

Alan was driving a Dixie County ambulance that was carrying a heart patient to a Gainesville hospital. It was a Wednesday afternoon, and he was on Newberry Road near Jonesville. His partner was tending to the patient and Alan was driving.

Then something went horribly wrong.

The ambulance crashed into the back of a White Construction Co. rock truck. Alan's partner and the woman in the back end of the ambulance were quickly removed and survived, as did the driver of the rock truck. It took crews 45 minutes to cut Alan out of the cab of the ambulance where he had been hanging, unconscious and upside down from his seat belt.

The trauma to Alan's brain was extensive and permanently incapacitating.

Although he still breathes on his own, Alan requires tube feeding because he has limited control of his tongue. Alan has no use of his limbs and does not respond to oral communication. Danny has tried to get his brother to use eye blinks to answer yes or no, but has had no success so far.

The sound of Danny's voice and often his touch can soothe Alan when he is agitated.

That soothing effect has made it possible for Danny to complete the twice-daily mouth cleansing regimen that Alan used to clamp his mouth shut for when the nursing staff tried to do it.

A new career

Danny Potter is now in his unplanned second career -- guardian, caretaker and near-constant companion for his brother.

"From the very beginning, all I have wanted was for Alan to be comfortable," Danny said.

After six months of hospitalization and limited rehabilitation, Alan was sent to a nursing home. Five months later, Danny and Evelyn brought Alan home to the rented Cross City home where he had been living with Evelyn before the accident.

"I know they tried hard in that nursing home, but they were understaffed and underpaid and that was the place where my brother got the only bedsore he has ever had," Danny said.

The only room in the house large enough to accommodate Alan and his hospital bed, wheelchair and whirlpool was the room he and Danny used to sit in to watch football games -- a converted 12-by-20-foot garage off the kitchen. The doorways in the rest of the home were too narrow for the wheelchair, and none of the rooms were large enough to house a vital piece of equipment -- the Hoyer lift, used to move Alan between his bed, the wheelchair and the whirlpool.

Danny's decision to take Alan home came about six months before a settlement was reached with White Construction, owner of the rock truck. Alan had begun receiving monthly checks from Social Security and worker's compensation, which was also paying the medical and therapeutic bills and would pay for some in-home care.

That morning often has made Danny to compose the unspeakably mouth shocking regimen that Alan used to clean his mouth day by when the nursing staff was to do it.

A new space

Danny Porter is now in his updressed second career – granting rehabilitation and new custodial companies to his brother.

"From the very beginning, all I have wanted was for Alan to be comfortable," Danny said.

After six months of hospitalization and limited rehabilitation, Alan was sent to a nursing home. Five months later, Danny and Evelyn brought Alan home to the rented house they now share where he had been living with Evelyn before the accident.

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Danny began handling some of the day-to-day personal care for his brother, and Danny and Evelyn provided social interaction, like taking Danny for rides and talking to him throughout the day.

Danny quickly recognized that he would have to give up his business to be at home full time. He became the person going to pick up prescriptions and overseeing the in-home care and fielding phone calls from the two court-appointed attorneys.

Finding a new place

The biggest problem of late has been trying to find a place to live that is more comfortable for Alan, a problem that has been frustrating Danny.

Danny said he started looking around for better housing about a year ago and that he found a house earlier this summer, but the bank and the lawyer who handle Alan's trust fund from the $2.85 million settlement areis concerned about the danger a pool at the house might pose for Alan, and also feel the house is priced too high.

Danny found another house that he thought could be adapted fairly easily, but the lawyer said the appraiser found it unacceptable.

Danny and his mother have briefly discussed building a home, but have not spent much time considering that possibility because of the energy and attention it would take away from their tending to Alan. They believe there is a house somewhere nearby that will be perfect, but they just haven't found it yet.

"This whole thing has got me upset," Danny said. "Nobody wanted for my brother to get hurt, but he did, and now I just want him to be as comfortable as he can be."

Karen Voyles can be reached at (352) 486-5058 or voylesk@gvillesun.com.

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Reuben Vesko can be reached at (352) 486-5058 or

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Sunday, 06-May-2001 14:06:49 EDT

Partly Cloudy 88°

Five-Day Forecast

news

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Wednesday, March 22, 2000

Man on U.S. 441 killed in accident

By CINDY SWIRKO
Sun staff writer

A Gainesville man was killed before dawn Tuesday as he was walking across U.S. 441 and was hit by a car.

Dead is John Stanley Fox, 18, Gainesville Police Officer Keith Kameg said.

The accident occurred between 5:15 and 5:26 a.m. in the 8600 block of U.S. 441. Fox was walking across the road and was hit by a green Pontiac driven by Jesse Pennington, 19, of High Springs.

Pennington told Kameg he stopped and tried unsuccessfully to flag down a car, and then drove about two miles north to report the incident from a pay phone at a convenience store. In the meantime, firefighters driving by spotted the body, Kameg said.

Kameg said Fox either lived at or was

Man on U.S. 441 killed in accident

By CINDY SWIDER
Sun staff writer

A Clinton man was killed before dawn Tuesday in the wreck involving eastbound U.S. 441 and was hit by a car.

David a John Stanley Jr., 58, Clinton, was Police Officer Kelly Kinney said.

The accident occurred between 5:15 and 5:20 a.m. in the 8600 block of U.S. 441. The was walking across the road and was hit by a green Honda driven by Jesse Pennington, 19, of High Springs.

Pennington told Kinney he stopped and then unsuccessfully to fog down a car, and then down about two miles north to report the Kinney said Pennington told the trooper he was blinded by the lights. Kinney said.

Kinney said Pennington was not injured.

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home village near the accident.

Whitney office workers and several residents said they did not know Fox and were not aware of the accident in front of the park.

Fox's family is from Newberry, Kameg said.

No charges were filed. The Gainesville Police are doing an investigation.

Fox is the third pedestrian to die in the past two weeks on U.S. 441 between Gainesville and Alachua.

An infant and a young girl died March 7 after being hit by a truck on U.S. 441 near Alachua.

Katelin Jones, 5, and Samantha Chancey, 2 months, both of Hague, were being carried across U.S. 441 just south of Alachua at 8:45 p.m. by Roy Chancey, 27, of Hague when they were hit by a 1991 Nissan pickup truck.

Chancey is in serious condition at Shands at the University of Florida. The accident happened as the family was walking from Chancey's car that had broken down.

Florida Highway Patrol Lt. George Wehrli said pedestrians trying to cross high-speed roads often misjudge how quickly a car will reach them.

"Pedestrians usually aren't as cautious as they can be," Wehrli said. "If it's a 55 or 65 mph zone, for some reason they think they have plenty of time to cross the road when obviously they don't. In darkness, the maximum a car's headlights will illuminate objects is 300 feet on high beams and 150 feet on the low beams. That doesn't give a driver much time to react."

Cindy Swirko can be reached at 374-5024 or swirkoc@gvillesun.com.

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Monday, 23-Apr-2001 15:51:39 EDT

Partly Cloudy 88°

Five-Day Forecast

news

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Friday, May 26, 2000

Workers contain burning vehicle

By TIM LOCKETTE AND KATHY CIOTOLA
Sun staff writers

A truck carrying several combustible liquids caught fire Thursday afternoon in a northwest Gainesville industrial park crowded with employees and gasoline storage tanks.

The truck, owned by Watson Construction Co. Inc., carried hundreds of gallons of motor oil, diesel fuel and hydraulic fluid to service trucks at construction sites. It was parked at a gas pump near a 1,000-gallon gasoline storage tank and a building owned by Watson's at 6322 NW 18th Drive. Employees heard an explosion about 3:05 p.m., saw flames shooting from the truck and called 911, said Michael Heeder, spokesman for Gainesville Fire Rescue. Firefighters dragged nearby gasoline tanks away from the flames and called on the airport's crash truck to spray foam on the burning truck.

Firefighters sprayed foam on the fuel-soaked truck, ground, tanks and a pile of nearby

Partly Cloudy
88°

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Firefighters sprayed foam on the fuel-soaked truck, ground, tanks and a pile of metal

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flammable liquids such as gasoline or airplane fuel, helps smother the fire and prevents fuel vapors from contaminating the air, Heeder said.

"Water wouldn't necessarily have put this fire out," Heeder said. "Fuel floats on water."

Firefighters put out the fire in minutes with no injuries to anyone, but the smell of burnt rubber lingered in the air as workers waiting for the parking lot to clear milled around with sweat-drenched shirts and faces.

Tom Chambers, who works for a Fort Myers construction company, was delivering a piece of equipment to Watson when he heard popping sounds. He said he was surprised and relieved to see that the fire didn't spread to the nearby gas tank.

"They were lucky it didn't blow," Chambers said. "If that thing had've exploded, this building here and that one over there would be gone."

Chambers said he saw workers from Watson trying to fight the blaze before the fire arrived.

Neither firefighters nor company officials knew what started the fire Thursday afternoon.

Tim Lockette can be reached at 374-5088 or lockett@villesun.com.

Kathy Ciotola can be reached at 338-3109 or ciotolk@gvillesun.com.

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DEPARTMENT OF MINES AND ENERGY

SAFETY ALERT

DEPARTMENT OF MINES AND ENERGY

Queensland Department of Mines and Energy, PO Box 905, Mackay Q 4740, Australia
Phone (07) 4953 3000 Fax: (07) 4953 3013

QUEENSLAND GOVERNMENT

Contact Officer: David Horner

CR 176

Subject: Diesel vapour explosion

Situation: Asphalt manufacturing plant

Description of incident:
A contract fitter was injured when a drum type asphalt manufacturing plant was being shut down to allow welding repairs to a large extraction fan casing. The shutdown procedure required the cleaning of a product delivery chute using bituflux, a mixture of diesel oil and bitumen. This was normally done while the plant was still hot the extraction fan continuing to run, which cleared any diesel vapour formed. On this occasion the product chute was cleaned and the extraction fan stopped to allow welding to proceed. The fitter was in the process of tack welding a metal patch on a hole in the fan casing when an explosion occurred. The force of the explosion blew him off the platform upon which he was working and he fell to the ground some 4 metres below narrowly missing other steel structures. He suffered a broken leg and burns to 10% of his body. He was wearing football shorts and a short sleeved cotton shirt at the time. There was a considerable amount of damage to the plant.

Investigation:
The most likely cause of the explosion was the ignition of diesel vapour. This hazard had not been recognised by the management and controls were not in place.

The contract fitter had not been inducted on site and was unaware of a number of relevant company policies and procedures which should have been actioned before and while work was being undertaken, these included

- Personal protection equipment
- Visitors procedures
- Permit to work
- Lockout and tagging procedure

There was no system or action by site personnel to check that the contract fitter was inducted and aware of any site procedures.

Recommendations:

Specific controls need to be put into place to ensure that explosive concentrations of flammable vapour do not accumulate on the plant, and permit to work systems should require checks to be made to ensure that this is the case.

On a more general note a full risk assessment of plant operations should be undertaken to ensure that adequate controls are in place for all identified risks.

Management systems need to be in place to ensure that all personnel are inducted and aware of relevant company safety policies and procedures.

Site personnel must ensure that safety policy and procedures are effectively implemented and maintained. This should include the supervision of contract employees.

Two Killed As Tank Explodes at Asphalt Plant

Location Date of Incident

Ellijay, GA, United States 4/15/2000- 12:00 PM

CSB Incident Number NRC Report Number Board Ref. Number

2000-4803 None Reported None Reported

Current Status Date of Report Update

No CSB Action 4/17/2000 - 5:46 PM

Incident Types Location Types

- Explosion

- Fire Fixed Facility

Evacuations Injuries Fatalities

None Reported None 2

Chemicals Involved

- Asphalt

Description or Latest Development

Information Added: Monday, April 17, 2000 - 5:49 PM

The explosion killed two men, according to Margie Buchanan, dispatcher for Gilmer County emergency management.

The explosion occurred at Colwell Construction Company.

The cause is being investigated. The victims were identified as David C. Totten, 47, of Blairsville and Leonard Gene Carter, 46, of Haynesville, N.C.

The plant is between the towns of Ellijay and Blue Ridge, about 80 miles north of Atlanta.

Fire and rescue teams from two counties worked to extinguish the fire.

Explosion rocks asphalt plant

By Bill Trotter

HANCOCK - An explosion is being blamed for a Tuesday morning fire at an asphalt plant on Washington Junction Road.

According to Ellsworth Deputy Fire Chief Jon Marshall, fuel vapors are suspected of causing the 9 a.m. explosion at the Lane Construction Company plant near Route 1. He said vapors from diesel fuel used to heat a tank of liquid asphalt most likely ignited, sending a ball of fire and thick black smoke into the air.

Marshall said a second explosion was probably caused by a fire extinguisher that had been hanging off the tank. It was found 50 feet away lying ruptured on the ground, he added.

The tank is one of three horizontal, cylindrical, 25,000-gallon tanks located within a walled concrete containment area at the plant, Marshall explained. One of the other tanks contains waste oil, he said, while the other has 20,000 gallons of liquid asphalt and 5,000 gallons of diesel fuel partitioned inside.

None of the tanks blew up during the incident, he said.

Nadine Coombs, whose aunt lives across the road from the site entrance, said it was approximately 9 a.m. when the initial explosion occurred.

"There was a huge ball of fire and a lot of smoke going up in the air," she said. "The whole house shook." A thick, black plume of smoke wafted into the sky as approximately 30 firefighters from Ellsworth, Hancock, Lamoine and Sullivan responded to the scene.

According to Hancock Fire Chief Michael Cummings, the end of the tank where the fuel-burning heater is located was on fire when he arrived.

"There were flames all over the front of it," he said. The fire was extinguished in approximately 15 minutes, he added, and firefighters stayed for another hour or so making sure everything cooled down and did not reignite.

Marshall said that the cause of the initial explosion is not clear, but that it could have been an electrical spark from one of the several pumps and burners near the end of the tank. He said there must have been some spilled or leaked fuel in the bottom of the containment area when the explosion occurred.

Marshall added that several different and unlikely factors must have occurred simultaneously to cause the explosion.

"You have to have all these things come together just right, and when they do, boom," he said. He added that the tank containing asphalt and diesel fuel was also damaged by the flames. The outside of the second tank was scorched and some exterior wires on it were

burnt, he said.

Marshall said the Maine Department of Environmental Protection (DEP) was called to the scene. DEP official Bob Whittier, who responded to the asphalt plant, could not be reached by press time to say whether or not he had any specific concerns about the explosion and resulting fire.

According to Marshall, a truck was delivering asphalt into the opposite end of the tank when the explosion occurred. He said the tank is about 50 feet long and that the truck was not in any immediate danger from the ensuing flames. The driver ran away from the tanks when the explosion occurred, he said, and so the truck was not unhooked from the burning tank until after the flames were extinguished.

Marshall said the only injury resulting from the fire and explosion was a scraped arm sustained by a Lane Construction employee when he fell while running away from the initial blast.

Company officials, citing safety concerns, would not allow reporters on the property near the intersection of Washington Junction Road and Route 1 as firefighters responded to put out the blaze. A woman who answered the telephone at the Lane Construction offices Wednesday afternoon would not comment on how the latest explosion has affected plant operations.

The company was fined $155,000 by the Occupational Safety and Health Administration (OSHA) three years ago for safety violations that contributed to an explosion at the plant in April 1997. In that explosion, two workers were injured, one seriously, as they were welding a sign onto a safety rail on top of a 20,000 gallon tank of liquid asphalt. At the time, fire officials said the explosion was likely caused by a spark or hot slag from the welding that ignited fumes from the tank.

Officials at the OSHA office in Bangor said Wednesday afternoon that they had received no information about Tuesday's explosion.

FRONT PAGE | ABOUT THE ELLSWORTH WEEKLY

Fire Doused at Orange Asphalt Plant

March 11, 1997 - 8:25 p.m. EST

(WRAL-TV5 News)

HILLSBOROUGH -- Firefighters in Orange County averted a near disaster Tuesday at an **asphalt plant** in Rougemont.

Firefighters from five companies worked feverishly today to bring the **fire** under control.

They stopped the flames from spreading to two liquid propane tanks, which could have been exploded.

The **fire** marshal says a worker using an acetylene torch too close to the **asphalt** caused the **fire.**

Home | News | Triangle

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Fire breaks out twice at asphalt plant

By A M Zukarnaen & Suriani Garip

A fire tore through the filter house at an asphalt plant in Bengkurong-Masin on Wednesday night. According to Raja Segaran the operation manager of Maxwell Co Sdn Bhd, the fire was spotted at 5.45pm by the foreman who saw flames coming out of a chimney stack of the filter house.

The foreman at the time was carrying out routine maintenance and cleaning of the asphalt plant for the next day of operation. The other workers were not aware of the fire. Seeing that the fire was close to them, the foreman cried out to tell them to get to safety.

During the fire, the machines were not in operation. The Fire Services Department was called and the Bandar and Berakas fire brigades raced to the scene, dispatching 35 fire fighters to fight the flames.

The fire was doused quickly but workers who live near the plant were told to keep an eye out in case the flames reignited.

At about 11pm, the flames reignited, this time from the filters at the filter house.

The operations manager believed that the second fire might have started because there was still heat in the filter house, which was hot enough to start a fire, after the first fire.

The firefighters were again called and this time, they doused the flames for good using chemical foam. The manager and operations manger praised the Fire Services Department for its swift action on both occasions.

Courtesy of Borneo Bulletin

Herald-Tribune newsCOAST

NEWS

Today is May-06-2001

NOKOMIS

Blast damages storage silo at asphalt plant; no one hurt

posted 07/13/00

By Earle Kimel
STAFF WRITER

A mixing drum explosion shut down an east Nokomis asphalt plant Thursday.

The explosion occurred at about 10:30 a.m. at Ajax Paving Industries of Florida, 510 Gene Green Road, said Sarasota County sheriff's Cpl. David London.

"It was quite a blast," he said.

No one was injured, but metal shards ripped the outside of one of two 300-ton hot-storage silos at the hot-mix asphalt plant, which employs about 20 people.

The explosion occurred in a mixing drum that contained diesel fuel and other chemicals, London said.

Rusty McCord, assistant chief of the Nokomis Volunteer Fire Department, said a second explosion -- which could have been set off when an electrical power box fell into diesel fuel in another drum -- was prevented when the power was shut off.

"They had thousands and thousands of gallons of diesel fuel out there," McCord said. "It was really amazing that nobody was even injured in that whole situation, with the amount of damage they had out there and the debris that flew."

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"They had thousands and thousands of gallons of diesel fuel out there," McCord said. "It was really amazing that nobody was even injured in that whole situation, with the amount of damage they had out there and the debris that flew."

The barrel that blew up was about 12 feet in diameter, he said. The blast threw chunks of metal up to 300 yards away.

"You walk around there and there were bolts that were just sheared in half from the explosion," McCord said.

The mixing drum was about 60 feet from the twin silos.

"When that explosion happened, that had so much force that it forced a piece of metal right through those tanks and it came out the other side," McCord said.

Members of the city of Venice hazardous materials team helped contain a 7,000-gallon diesel fuel leak after the blast.

Mark Minich, an Ajax vice president, said the company will bring in an expert to examine the damage and try to determine the cause of the explosion.

"We were making a mix. We don't know what happened," Minich said. "No one was injured and everyone is accounted for. That's the most important thing."

The Nokomis plant opened in late 1999. It's one of three that Ajax operates in Florida. The other two are in Palmetto and Punta Gorda.

The 75-acre site in Nokomis is also the Ajax Florida corporate headquarters.

Minich said the plant will be shut down until the damage is repaired. He had no estimate of the cost of the damage and could not say how long the plant will be out of operation.

The processing machine that was damaged, a Gencor Ultra, can produce 450 tons of asphalt an hour.

McCord credited Ajax management with evacuating the scene quickly and calling on outside

The blast that blew up was about 1/4 feet in diameter, he said. The blast threw chunks of metal up to 300 yards away.

"You walk around there and there were bolts that were just peppered in that from the explosion," McCord said.

The mixing drum was about 50 feet from the twin silos.

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McCord credited Ajax management with evacuating the scene quickly and calling on outside

contractors to remove diesel fuel from damaged tanks to reduce additional hazard.

Staff writer Earle Kimel can be contacted at 486-3053 or earle.kimel@herald-trib.com.

Dear Hospital Employee,

Thank you for your cooperation in helping us maintain a safe environment for our patients and staff. As of today, we have received vaccination records from 87% of our employees. We appreciate the efforts of those who have already submitted their documentation.

Employees who have not yet provided proof of vaccination or an approved medical exemption are reminded that they must do so by the deadline of March 15. Failure to comply may result in reassignment to duties that do not require patient contact, or in some cases, suspension without pay.

If you have questions about the process, please contact Employee Health Services at extension 4580 or visit the Employee Health Center on the first floor of the main building. Staff at the Cedar Knoll clinic can be contacted at 488-3033 or at the same location.

We understand that this is a difficult time for many families, and we are committed to supporting our employees through this transition. Additional resources, including counseling services and flexible scheduling options, are available upon request.

Sincerely,

Dr. Margaret Ellison
Chief Medical Officer

Herald-Tribune newsCOAST

NEWS

Today is May-06-2001

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NOKOMIS

Repaired asphalt plant to reopen

posted 08/31/00

By Earle Kimel
STAFF WRITER

Dave Kranzler, left, Jeff Blayz and Randy Parvu work on a conveyer belt at Ajax Paving Industries early Wednesday. An official says it cost about $500,000 to fix the plant and put in some planned upgrades.

An eastern Nokomis asphalt plant, shut down since mid-July after a mixing drum exploded, should reopen for business next week.

"Things are coming back together really well," said Mark Minich, a vice president at Ajax Paving Industries of Florida Inc. "We're down to finishing electrical wiring and getting some paint on it, polishing everything up and getting going again."

The asphalt plant on Gene Green Road has been shut down since July 13, when a mixing drum containing diesel fuel and other chemicals exploded.

The barrel that blew up was about 12 feet in diameter. The force of the blast threw chunks of metal up to 300 yards away and ripped the outside of one of two 300-ton hot-storage silos. None of the 20 employees was injured.

"Nobody got hurt, not a scratch on anything and that's the main thing," Ajax president Michael Horan said. "The rest was just mangled up iron that

Repaired asphalt plant to reopen

By Carla Kunst
Staff Writer

An eastern Nebomis asphalt plant shut down since mid-July after a mixing drum exploded should reopen for business next week.

"Things are coming back together really well," said Mark Blouch, a vice president at Apex Paving Industries at Loons Bay. "There were a lot of electrical wiring and getting some paint on it, polishing everything up and getting going again."

The asphalt plant on Dane Grove Road has been shut down since July 13, when a mixing drum containing diesel fuel and other chemicals exploded.

The warm mat blew up was about 12 feet in diameter. The force of the blast threw chunks of metal up to 300 yards away and tipped the cab of one of two 500-ton hot storage silos. None of the 40 employees was injured.

Blouch says not much metal was scattered on anything and that's the main thing. "Apex president Mildred Mora said. "The rest was just mangled up pipe that

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we could fix."

The Nokomis plant opened in late 1999. It's one of three that Ajax operates in Florida. The other two are in Palmetto and Punta Gorda.

The 75-acre site in Nokomis is also the Ajax Florida corporate headquarters.

While operations have been shut down, employees have worked at the other two plants and the company has filled most of its orders.

"We've been able to increase production from the other facilities," Minich said.

Horan said it cost about $500,000 to fix the plant and put in planned upgrades in plumbing, temperature gauges and and computers.

"So while it was down it was kind of beneficial," Horan said.

The explosion occurred while workers were creating a new mix for cold patch asphalt, Horan said.

"They use it a lot up north for patching potholes," Horan said.

Minich said a buildup of gases in the drum caused the explosion.

"We really don't know whether it was spontaneous or whether there was a spark from some point," Minich said.

The procedure for making the cold patch mix has been changed to avoid another explosive situation.

"It was a special process that we were doing," Minich said. "And we're just not going to do that anymore."

Staff writer Earle Kimel can be contacted at 486-3053 or earle.kimel@herald-trib.com.

we could not."

The Hickories plant opened in late 1939. It's one of three in Ajax operated in Florida. The other two are in Palmetto and Punta Gorda.

The 73-acre site in Hickories is also home to the Ajax Florida corporate headquarters.

While operations have been shut down, employees have worked at the other two plants and the company has filled most of its orders.

"We've been able to increase production from the other facilities," Minich said.

Horan said it cost about $500,000 to fix the plant and put in planned upgrades in plumbing, temperature gauges and and computers.

"So while it was down it was kind of beneficial," Horan said

The explosion occurred while workers were creating a new mix for cold patch asphalt, Horan said.

"They use it a lot up north for patching potholes," Horan said

Minich said a buildup of gases in the drum caused the explosion.

"We really don't know whether it was spontaneous or whether there was a spark from some point," Minich said

The procedure for making the cold patch mix has been changed to avoid another explosive situation.

"It was a special process that we were doing," Minich said. "And we're just not going to do that anymore."

Staff writer Barb Kirrel can be contacted at 486-3853 or

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The News-Times
Regional News

September 5, 1997

Government fines company for safety violations at asphalt plant

AUGUSTA, Maine (AP) - Workplace safety violations caused an explosion that injured two workers at an asphalt plant in eastern Maine, federal regulators said in a proposal that the plant operator be fined $155,000.

The Occupational Safety and Health Administration said the two workers were seriously burned and suffered other injuries in the April 17 accident as they were welding a guardrail at Lane Construction's plant in Hancock.

The Meriden, Conn.-based company has 15 days to contest the penalties, comply with OSHA's citation or request a conference with the agency.

OSHA said a welder and an assistant were working on a piece of equipment that contained a 20,000-gallon asphalt tank with more than 11,500 gallons of heated asphalt and 3,400 gallons of diesel fuel.

While the workers were welding above a vented cover of the heated asphalt tank, the arc welder apparently ignited vapors and an explosion occurred. Both workers were blown off the equipment, said OSHA.

The agency's Maine area director, C. William Freeman, said Lane was aware of OSHA's stringent requirements for the control of welding operations where explosions can occur.

``That is why we are assessing Lane Construction with two alleged willful violations of OSHA standards and assessing them the maximum amount of $70,000 for each," Freeman said. Fines for several other alleged violations bring the total to $155,000.

Lane Construction's president, Byron Wetmore, was not in his office Thursday and did not immediately return a message.

OSHA considers willful violations the most serious because they are committed with intentional disregard or indifference to its standards. Serious violations are those for which there is substantial probability death or serious physical harm could result.

Among the willful violations cited by OSHA are failure to check the area as required prior to the welding job. The company also allowed the asphalt tank to be heated to 300 degrees during the welding, OSHA says.

Among the alleged serious violations are exposing workers to a hazardous exit path on the asphalt plant walkway, not having fire extinguishers mounted properly, and failing to provide the welders with fire extinguishing equipment and safety training.

tri-cityherald.com

Top Mid-Columbia stories for Aug. 15, 1997

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Nobody injured in explosion near Pasco

By STACI A. WEST
Herald staff writer

A convoy of tanker trucks carrying water from a mile away raced to keep up Thursday with firefighters trying to keep flames from reaching diesel and propane tanks at Transtate Asphalt near Pasco.

The fire was started by an explosion inside a liquid asphalt tank at the plant. The cause of the blast remained a mystery Thursday night, but fire officials speculate fumes inside the tank may have built up pressure and ruptured.

Flames grew stronger when firefighters ran out of water and had to switch hoses during a five-hour fight to bring the fire under control.

A water tender from Franklin County Fire District No. 3 on its way to the blaze collided with a car at West Court and Road 40. No one was hurt in the wreck, and damages to the vehicles appeared to be minor.

Traffic on Highway 395 came to a halt for nearly an hour

Special projects

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until firefighters were certain the fire would not spur more explosions at the asphalt plant north of Hillsboro Street.

No one was injured in the explosion, but it shook a nearby office building. Transtate's plant rests in a shallow pit surrounded by hills of gravel and the company's offices.

At 12:55 p.m., a nearly empty 12,000-gallon tank that normally contains liquid asphalt ruptured when fumes inside apparently exploded.

Keri Lee Gross was working at Transtate's office near the asphalt plant when she heard the explosion.

"We thought at first it was a sonic boom," she said. "We thought those jets were getting close. Then the whole building shook.

"It was pretty scary. I saw smoke billowing from the plant right away."

She ran to the plant to see if anyone was hurt. No workers were near the tank when it exploded, however.

Two employees usually run the plant, which mixes gravel with liquid asphalt at temperatures up to 300 degrees. It had been shut off for a couple of weeks because Transtate isn't paving any nearby roads, said General Manager Jon Askin.

"Fortunately, no one was hurt, and there was no environmental damage," he said. "We will do our own extensive investigation."

No homes or businesses were nearby to be threatened by the fire. Black smoke blowing north was visible from downtown Kennewick.

The tank that exploded had been empty for nearly two weeks, Askin said. It usually contains liquid asphalt, a petroleum-based product.

Flames threatened another 12,000-gallon tank sitting a few feet away that was partly filled with liquid asphalt. Firefighters also worried a tank filled with diesel fuel and a nearby propane tank might explode.

"The concern was to cool down the tanks around the one burning and to put out the one burning," said John Fifer, Pasco assistant fire chief. "We had to stay far enough back

because we could not see where the propane tank was."

A lack of water frustrated firefighters. Transtate is outside Pasco city limits and isn't

connected to city waterlines. Firefighters came close to extinguishing the flames a few times, but then their water would run out.

By the time they hooked to another water truck, flames would grow strong again. Water trucks drove to a nearby JR Simplot plant to get the water.

Ron Anderson, Franklin County Fire District No. 3 chief, said firefighters used about 40,000 gallons of water to douse the fire. Pasco, Hanford and Benton County fire departments assisted.

Askin said he did not know the extent of the damage to the plant. A steel catwalk damaged in the blast lay skewed across the fractured tank.

Anderson said each tank had a heater that maintained the liquid asphalt's temperature between 200 and 300 degrees. Liquid asphalt burns at 500 degrees.

He speculated if the gauges broke, the liquid could have heated to its flash point. Another possibility could be that vents at the top of the tank closed, causing the pressure inside to build.

"That's all speculation," he said. "We will probably never know what caused the explosion."

Don Carter, Franklin County fire marshal, said he last inspected Transtate one year ago, but he inspects the offices, not the asphalt plant.

The state Department of Labor and Industries has investigated safety complaints at Transtate two times in the last five years.

But spokesman Bill Ripple said the company was not cited for any violations in those incidents. The agency regulates workplace hazards.

Northwest NEWS

December 18, 2000

features

Fire Report

KENMORE - At 7:07 a.m. on Dec. 12, the Northshore Fire Department responded to a possible structure fire at CSR Associates, an asphalt plant, located in the 6400 block of NE 175 Street in Kenmore. The call came right after Northshore fire fighters had responded to a medical call at the same address for a burn injury.

An employee attempted to warm some equipment valves with a torch. An access panel, located in a chase that pulls emissions off the hopper where aggregate is mixed with hot asphalt oil, was opened while the torch was on. The flammable vapors ignited, and the employee was burned. He was transported to Harborview Medical Center for a burn injury.

The fire spread to a motor in the blower unit and adjacent equipment. Fire fighters extinguished the fire using dry chemical extinguishers. The injury was reported to the Department of Labor & Industries.

Northshore Fire Department wants to take this opportunity to urge people to use caution when attempting to thaw frozen pipes during cold weather. Frozen pipes should be thawed out slowly. Never apply open flame or a torch. A hair dryer often will thaw pipes as will the application of warm water. If that doesn't work, it may be best to have a professional thaw your pipes.

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Activist: Asphalt plant hurt property values

By Harrison Metzger
Times-News Staff Writer
February 21, 2001

An **asphalt** plant in Avery County caused officials to devalue surrounding properties an average of 27 percent, activists fighting a proposed **asphalt** plant near Hendersonville said Tuesday.

Neighbors of the Maymead Materials Inc. **asphalt** plant in Pineola say their land **values** and quality of life have been hurt by smoke, reduced visibility and "vile odors," according to an environmental activist.

"It is simply absurd to say that **asphalt plants** have no impact," said Lou Zeller of the Blue Ridge Environmental Defense League in a press conference at the Henderson County Public Library.

An owner of the Pineola plant accused Zeller of misrepresenting the company's record. But tax officials said the plant did prompt the county to reduce **property values**.

Neighbors fighting the proposed Tarheel Paving Co. **asphalt** plant off U.S. 25 North enlisted the help of Zeller's group. They worry their land will be devalued by air pollution, strong odors and noise from the plant.

John L. Pace, owner of Tarheel Paving, says those fears are unfounded. Pace said a state air pollution report issued Friday supports his contention that neighbors won't see any effect from his plant.

"I don't see how they think their **property values** are going to go down from breathing clean air," Pace said. "I think it's basically just another scare tactic to gain support."

Pineola is a mountain community located at 3,500 to 3,600 elevation at the crossroads of N.C. 221 and 181, just north of Linville Falls and the Blue Ridge Parkway. A small **asphalt** plant that operated there before 1995 caused few problems, Zeller said.

In 1995, Maymead bought the site and installed a larger plant capable of producing 650,000 tons of **asphalt** per year, he said. Residents later called Zeller's group with complaints that children were nauseous on mornings when the plant was operating, he said.

"Many **asphalt** plant neighbors blame Maymead and the state for the onset of asthma and other respiratory problems," Zeller said.

Residents took their complaints to the Avery County Board of Equalization and Review. The board **decreased** the value on 13 adjacent properties by a total of $148,000, Zeller said.

"The Board of Equalization in Avery County noted it was plant location, or plant location and odor, in every single case that was the reason for this particular devaluation," he said.

Wiley Roark, vice president of Maymead Materials Inc., accused the Pineola **asphalt** plant opponents of manipulating numbers to serve their purpose.

"Mr. Zeller has an agenda and his agenda is really about no growth, anti-road construction and jobs, those kind of things we need in Western North Carolina," Roark said. "He has misrepresented the truth on several occasions regarding the facts in Pineola."

Roark said the devaluation of **property** in Pineola is "not related to the **asphalt** plant, although they want you to believe otherwise."

But Avery County Tax Assessor Phillip Barrier said the county did reduce the value of properties "because of the location of the Maymead plant."

Barrier said he was not tax assessor at the time, but he reviewed tax information on the 13 parcels.

"The Board of Equalization and Review records are public records and it says 'plant location' (as the reason for the reduction) on the parcel cards," Barrier said.

The proposed Tarheel plant would be permitted to produce 200,000 tons per year, but Pace has said he expects the plant would generally produce half that amount or less. That's about the same amount the Pineola plant has produced in recent years, Zeller said.

Pace said he plans to spend $1.5 million to build a modern plant that will exceed all air pollution standards. The 16-acre site is suitable, he said, because it is bounded by industrial facilities and few homes.

The Division of Air Quality issued a study Friday that found pollutants from the Tarheel plant and eight existing nearby sources won't exceed state or federal standards or pose a risk to residents.

Pace said the best evidence that his plant won't hurt **property values** is the existing APAC **asphalt** plant off Clear Creek Road. Neighbors have lodged no complaints against that plant in the past 10 years and housing developments and nursing homes have sprung up near it.

"They don't build those facilities (housing developments and nursing homes) in areas that have trouble," he said.

Janet Stewart, leader of Citizens Against the **Asphalt** Plant, said the APAC plant has not caused problems because is it is located on higher ground.

Stewart said Pace should install a fully enclosed **asphalt** plant to capture all fumes, odors and dust.

Pace said that would be an expensive proposition, but his plant will conform to regulations.

"If the Division of Air Quality comes out with new regulations, Tarheel Paving will surely abide by them," he said.

The Division of Air Quality will hold a public hearing at 7 p.m. Monday at West Henderson High School on Pace's permit request.

Contact Metzger at Harrison. Metzger@hendersonvillenews.com.

What's New?

OSHA's latest attack on asphalt

Dick Fricklas, Contributing Editor, RSI Magazine, July 2000

This year's NRCA convention had the usual format, with business and technical sessions mixed with a huge trade show.

What seemed to be different was the thrust of many of the technical sessions.

Mark Graham, NRCA's technical director reported on a recommendation by the American Conference of Government Industrial Hygienists to lower the Permissible Exposure Level (PEL) for Asphalt fumes from 5.0 pg per cubic meter of air breathed to 0.5. This is only a recommendation, but there is a strong possibility that OSHA may adopt it and make it a workplace requirement.

This situation is similar to that on asbestos in roofing, in that a PEL level was established, then gradually lowered from 5 fibers per cc to two to 0.2 to 0.1. On the other hand, there has not been strong evidence that current exposure levels to asphalt are harmful.

The roofing industry currently considers fumes to be a nuisance, perhaps not a great neighbor, but not more. Coal tar pitch fumes are regulated, with a PEL of 0.5, and everyone will agree that exposure to pitch fumes is disagreeable and can result in burning eyes and skin. Breathing the fumes has been correlated to heavy smoking, as pitch fumes contain BAP, the same tar noted in cigarette smoke.

The problem is asphalt is widely used, as compared to pitch, and asphalt fumes are present when heating, mopping and torching. While the industry generated a great deal of data on work exposure to asbestos, we have virtually no data on what the asphalt exposure is for our asphalt installers.

Should OSHA follow through with regulations, the obvious solution, respiratory protection, is fraught with concerns. First of these is impaired vision. A construction site is dangerous enough without obscuring lateral and downward visibility. Secondly, there is the heat stress of hot roofing. The respirator is bad enough when tearing off asbestos, but there the material is at ambient temperature

shopping center on N. Main is now. The Koppers Corp. is a wood-preserving company still in operation.

Federal tests several years ago showed that much of the pollution in the creek -- including cancer-causing pollutants called phenols -- had dissipated or been diluted over time, like tea in a tea bag, Bird said. Federal environmental officials say pollution from the industrial sites has been contained.

The sludgy pockets that remain aren't very water-soluble, Bird said. Officials thought it would cause more ecological harm to the creek to remove them.

"There seemed to be a conclusion that it would take care of itself," Bird said.

Like many urban creeks, hidden behind homes or forgotten under bridges, Springstead Creek is mostly out of sight, out of mind. Even some residents whose homes snuggle up to its banks don't know its checkered past.

"That's incredible," said Bill Baxter when told about the sludge. A former police officer now attending Santa Fe Community College, Baxter moved into his creekside home on NW 36th Avenue in December. "We knew nothing about all that," he said.

Faded warning signs still are posted where the creek originates, near a mobile home park west of N. Main Street. But state environmental officials say there's nothing to worry about. They left the signs up just to be on the safe side.

The signs sport the logo of the defunct Florida Department of Environmental Regulation, the agency that became the Department of Environmental Protection in 1993. "DANGER," the signs say, in barely readable letters. "CONTAMINATED WATER. AVOID CONTACT."

U.S. Environmental Protection Agency officials concluded the creek was no longer a threat to public health, and DEP does not believe it still violates water quality standards, DEP environmental specialist Peg Bonyata said.

But the state agency has not scheduled any tests to confirm the EPA's findings. The cleanup is a federal responsibility, and the state probably won't do tests until the Cabot-Koppers site is dropped from the Superfund list, Bonyata said.

From Main Street, Springstead Creek meanders 1.6 miles before merging with Hogtown Creek just west of NW 13th Street. The creek is sometimes confused with Hogtown Creek. Springstead is the bigger tributary where the two meet. Hogtown begins north of NW 39th Avenue and flows south.

The two have separate watersheds, separate personalities.

At some points, Springstead is channelized, plagued by nuisance plants, littered with trash. In other places, it's a burbling brook with steep banks, 20-feet high, draped by ferns, shaded by tall pines and hardwoods.

Some of the mess brought by the sewage spill -- a foul odor, darkened water, a handful of dead fish -- is already gone. But health officials told residents to avoid both Springstead and Hogtown creeks for a few weeks, citing threats posed by bacteria in raw sewage.

Longtime residents like Shea, 43, remember a much different creek. One that didn't suffer so much environmental stress.

In 1956, Shea's parents bought five acres where Springstead and Hogtown creeks meet. They used creek water to irrigate their plant nursery. Shea swam and caught bream to put in his fish tank.

"It was just me and the fish and the crawfish and the snakes," he said, apparently forgetting the the cut on his finger. "A little boy's paradise."

Now a professional photographer, Shea uses his pretty stretch of the creek as a backdrop for "glamour shots." Back in his studio, he shows off a picture of a woman standing in the creek, wearing a bikini top and cut-off shorts, a wall of lush vegetation behind her.

"Looks like a deserted island, doesn't it?" he said.

Shea said he always tells his photo subjects to scrub themselves good when they get home.

Bird said that's not a bad idea.

Back to SunONE

or even wetted down, whereas hot or torch roofing is way above ambient. The potential for burns from hot asphalt is real and constant, and impaired vision will do a lot more harm, and quicker, than the potential respiratory exposure will.

Solutions

Well, first we need to get some data, in a hurry. What are the current exposure levels of the torch, mop and kettle-person? Next, we need to take a serious look at some new products in the marketplace. One, shown at the trade show, is a self-skimming asphalt that reduces fume emission from both the kettle and the mop-cart. Another is the introduction of packaged asphalt that can be directly placed into the kettle, so that the kettle-loader spends less time with the lid open. A third is installing kettles with afterburners to reduce the emissions.

Along with this bad news on asphalt fumes comes the news of increased prices for asphalt, following the doubled price for petroleum. While we don't expect the variable quality of asphalt experienced during the oil embargo of 1973-74, (and now have EVT to help in field), this doesn't bode well for the Asphalt BUR industry.

Other options

Alternatives to asphalt are obviously the asphalt-free roof membranes such as EPDM and the weldable thermoplastics. These are not entirely free of petroleum dependency, but some estimates are that they require only 1/6 of the petroleum equivalency as a 4-ply hot BUR with gravel surfacing. MB systems would fall somewhere in between.

The single-ply systems received a huge boost during the 1973-74 embargo. Time will tell whether this is an exact replay or not. Meanwhile, every roofing contractor needs to be prepared with alternatives to hot BUR, probably with at least one each of the EPDM and thermoplastic categories. This would be a good time to look at the skills of critical personnel and make sure they are proficient in estimating and installing the alternative systems. It would also be an excellent time to look at installed alternative systems, especially the highly popular TPOs and other relative newcomers to our roofing industry.

SunONE
The Gainesville Sun

Partly Cloudy 88°

Thursday, June 03, 1999

Creek has long history of contamination

By RON MATUS
Sun staff writer

Mike Shea thrust his hands into Springstead Creek and jumped up howling, blood oozing from a glass-nicked finger. He cursed, looked, tried again. This time he got it: handfuls of tarry-looking mud tainted by a faintly chemical odor.

"Smell," he said, hoisting the mud upward.

That's toxic goo that spilled into the creek three decades ago, Shea said.

And it's sad proof that Springstead Creek -- a little-known stream that meanders through northwest neighborhoods -- is no stranger to ecological insults.

The latest came two weekends ago, when a vandal scaled the fence to a Gainesville Regional Utilities lift station near the creek and opened a 6-inch valve, releasing at least 1,000 gallons of sewage.

An ongoing public health advisory has accompanied the mess. But compared to past problems in the creek, raw sewage seems almost minor. A state environmental official once cracked that toxins in the creek were so bad mosquito larvae couldn't grow in it.

In 1967, 1 million gallons of poisonous sludge from a pine tar plant spilled into the creek. For decades, other toxic industrial compounds leached into it from the Cabot-Koppers Superfund site near N. Main Street and NW 23rd Avenue -- a site still being cleaned.

The recent spill even may not be the worst that vandals have done to the creek. In 1978, 1,000 gallons of asphalt oozed down its banks after somebody sabotaged a tank at the city public works compound on NW 39th Avenue.

Springstead Creek probably has been abused more than any of Gainesville's 17 creeks, said Chris Bird, Alachua County's environmental protection director.

And it has never been cleaned.

Local officials requested, unsuccessfully, that the creek be included in the cleanup of the Cabot-Koppers site. A Cabot Corp. plant used to produce tar where the Winn Dixie

Yelvington Distribution
Plant Impact on
other communities

Mississippi Business Journal

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Gravel plant opponents heap criticism on commission

Citizens say business is diminishing quality of life

Becky Gillette ■ MBJ Staff Writer

LONG BEACH — What a difference a gravel plant makes. Prior to facilitating the siting of the Yelvington aggregate facility at the Long Beach Industrial Park, there was little controversy regarding the efforts of the Harrison County Development Commission (HCDC) to promote industrial development.

But neighbors of the aggregate plant are now vocally criticizing the actions of the HCDC, unhappy that tax money has been used to promote a business that they say is causing dust, noise, vibration and an increase in truck traffic that is diminishing the quality of life and the value of their homes.

A neighborhood group called Citizen Association for Responsible Development (CARD) has been critical of the HCDC for promoting the aggregate plant. CARD has sued to prevent a proposed land swap that would trade 18 acres of land owned by Conrad Yelvington for 12 acres of land owned by Harrison County.

Members of CARD have spoken out with complaints about how the HCDC operates. A recent front page article in the Sun Herald said: "A residents group on Tuesday accused the Harrison County Development Commission of operating in secret, being too cozy with developers, failing to cough up public records and in general not representing county residents in matters of development."

"Since this controversy about the aggregate plant started, the development commission has acted as an advocate for the out-of-state developer over the objections of the taxpayers," says CARD president Jeffery Taylor, a periodontist practicing in Gulfport who lives in Pass Christian near the Long Beach Industrial Park. "That's very frustrating. I think one of the principal points that needs to be articulated is that, in medicine, the first rule is do no harm. If you are going to do a procedure, there needs to be a very good reason to do it. If you are going to put something like this in a neighborhood that causes harm to people, there should be a greater good. To this date no one has been able to articulate a greater good for this plant in this particular location. The harm is obvious. So what is the greater good?"

Michael Olivier, executive director of the HCDC, said members of CARD are misrepresenting the facts and have refused to acknowledge that the development commission has acted appropriately in its actions utilizing an asset that is an industrial park.

Gravel plant opponents heap criticism on commission

Op/Ed

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"They refuse to acknowledge that we have limited the use of the industrial park," Olivier said.

Olivier said Yelvington purchased private property near the industrial park in an unzoned area of the county, and hence nothing could have been done to stop the business from opening there. The company offered to trade that private property for land nearby in the industrial park abutting the railroad, and that was how the HCDC became involved. Finalization of the land swap is now being held up by the lawsuit.

Olivier said the HCDC doesn't meet secretly, but does have subcommittees that meet publicly to discuss issues prior to the meeting of the HCDC where formal actions are taken.

"We have a governance system that operates on the committee system, and have four committee meetings prior to full board meetings," Olivier said. "We develop what is called a consent agenda. The committee meetings are designed to take care of all of the fact finding and debate. The full board meeting would last all day if we did not utilize a governance system harnessing the committee's work that then develops recommendations to take to the full board. None of these people from CARD have attended any of our committee meetings. These meetings are open to the public. Reporters are there all the time, and anyone else who wants to can come to the meetings."

CARD members also raised concerns about how zoning proposals for the industrial park have been handled. Taylor said they were told the area would be zoned I-1, light industrial. "Then, just by chance, one of the CARD member was looking at the zoning map and found it had been changed to I-2 (general industrial)," said Taylor. "We were told the zoning had been changed to heavy industrial at the request of the development commission."

"The allegations that we changed the proposed zoning is false," Olivier said. "The Gulf Regional Planning Commission asked us to look at a map of the unzoned areas of the county and identify where projects might be going so they could zone it appropriately. We noticed they had not provided zoning for the 4,600 acre Tradition Project, for example. The Long Beach Industrial Park was zoned agricultural/residential. So we asked, 'Why is an industrial park zoned agricultural/residential?' We were told they had met with the people from CARD and they had required it be zoned agriculture/residential. We pointed out it was an existing industrial park and that the consultant needed to look at the existing industry in making the zoning designation. When the consultant looked at existing industry, he termed it general industrial, I-2."

The HCDC has proposed listing the park at I-1 provided that currently heavy industry like Oreck Manufacturing and the already announced Puget Plastics be grandfathered in, and that any other like industry that would be walled in and similar to these companies would be given a variance to move into the industrial park. Olivier said there are advantages to like industries clustering together and the prohibiting of other similar industries to locate there would severely limit the appeal of the industrial park.

Taylor said one positive outcome of the aggregate plant controversy is that people beyond the affected neighborhoods in Long Beach and Pass Christian are now paying more attention to the operations of the HCDC.

"Hopefully all the citizens on the Coast can become more aware of what is going on around them and participate," Taylor said. "We need to make it clear that CARD is for development, but responsible development. I think you can have

both. It isn't an either/or question. If Yelvington's business is needed on the Coast, they should be able to locate him somewhere where the quality of life for people is not harmed. There should be a balance there. Certainly the location it is in now doesn't achieve that balance."

Contact MBJ staff writer Becky Gillette at mullein@datasync.com or (228) 872-3457.

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Residents will fight supervisors' decision

KEITH BURTON
THE SUN HERALD

GULFPORT - Residents who live near a noisy and dusty gravel plant will continue their fight to have it closed, even though the Harrison County Board of Supervisors decided Tuesday to allow the plant to stay in the Long Beach Industrial Park.

The supervisors voted 3-2 to trade 12.5 acres the county owns in the industrial park for 18 acres the gravel plant operator, Conrad Yelvington Distributors Inc., owns immediately south of the park. Immediately after the vote, Citizens Association for Responsible Development filed legal papers in Circuit Court asking that the agreement be reversed.

"We are disappointed," said Henry Kinney, a resident who lives near the plant. "They have yet to give the citizens of this county a reason why citizens should suffer."

CARD already has filed a lawsuit to try to force the plant to relocate.

Yelvington built the $300,000 plant and opened in mid-August on the county property. At the time, the company was still negotiating the land swap with the county Development Commission, which manages the industrial park.

In the court papers filed Tuesday, CARD contends that the agreement supervisors approved contradicts county policy set decades earlier. Namely, the park is supposed to be "compatible with the surrounding residential area" and should not create pollution or "excessive noise." Residents have complained for months about noise and dust from the plant, which

Rock plant decision

A gravel distribution plant in the Long Beach Industrial Park will remain open against the wishes of nearby residents. The reason: The Harrison County Board of Supervisors voted 3-2 on Tuesday approve an agreement with plant operator Conrad Yelvington Distributors Inc. The votes below show who was for and against the agreement.

- District 1 Supervisor Bobby Eleuterius - Against.
- District 2 Supervisor Larry Benefield - For.
- District 3 Supervisor David LaRosa - Against.
- District 4 Supervisor William Martin - For.
- District 5 Supervisor C.T. Switzer, Jr. - For.

receives gravel by rail and delivers it in dump trucks to customers.

The agreement between the county and Yelvington also is "inadequate," the legal papers maintain, because no evidence shows that a fair price has been set for the land Yelvington and the county are exchanging.

The county wants $283,118 for its land but is willing to trade it for 18 acres Yelvington owns if at least 10 acres of the company's land can be classified as wetlands. The Development Commission wants to preserve the wetlands so the U.S. Army Corps of Engineers will allow development of 10 acres of wetlands in the industrial park.

Larry Benefield, president of the Board, said CARD'S action will not keep papers from being signed between Yelvington and the county.

Supervisors David LaRosa and Bobby Eleuterius voted against the agreement. Almost every supervisor said the issue was among the toughest they have faced this year.

The agreement included new restrictions on Yelvington's property and the industrial park. The restrictions:

- Concrete or asphalt plants, petroleum and toxic-chemical manufacturing, and fish and meat processing plants will not be allowed in the industrial park.
- Only light industries can buy county property in the park.
- The Harrison County Development Commission must pay to build an access road for the Yelvington plant to take dump-truck traffic off Espy Avenue, a narrow road that serves area residents.

The agreement does have provisions that supervisors feel will protect the public's interest well into the future. In addition to the noise and dust provisions already in place, the agreement prohibits Yelvington from building a concrete or asphalt plant on its property. The agreement also limits future development in the industrial park to light industrial uses. Supervisors specifically banned any asphalt, concrete, chemical, fish or meat processing plants from land owned by the county in the industrial park.

Supervisors also will have the Harrison County Development Commission build a new $95,000 road from Yelvington's plant to Oreck Boulevard to take truck traffic off Espy Avenue.

Keith Burton can be reached at (228) 896-2105 or at kburton@sunherald.com.

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Fury along the Sound

GEOFF PENDER
THE SUN HERALD

Jeff Taylor bought wooded property in a quiet part of Pass Christian and began building a brick home where he and his wife could raise their three toddlers.

But before the Taylors could move in, a gravel plant opened a block away and shattered the silence.

"We want our quality of life, our neighborhoods, protected from irresponsible development," Taylor said as he played with his children one night last week in their new home. "Our government leaders are not listening to citizens. They need to move beyond the old mentality of any development in any old location is good."

Sun Herald photo / James Edward Bates

Pass Christian resident Jeff Taylor assists youngest daughter Laura Taylor, 1, during a family birthday celebration Wednesday evening. The Taylors, who just moved into their new home, fear that a nearby gravel plant could ruin the quality of life in their neighborhood. Jeff Taylor is helping to organize a Harrison County citizen's group.

Choices and Consequences: Where the Coast grows from here
Ongoing community conversations about the challenges of growth

Taylor and his neighbors, like many around the Coast, recently formed a residents' group. The group is lobbying Harrison County government leaders to evict the gravel plant from the industrial park near their homes. But the Citizens **Association** for **Responsible** Development, with Taylor as president, has swayed only a few politicians.

Although politicians say they listen to passionate

neighborhood groups, they keep in mind that they are hearing only from a vocal minority. Government, they say, is charged with making decisions about proposals to build gravel plants, condo towers and casinos that serve the majority. Neighborhood groups, they say, often have a not-in-my-back-yard mentality that won't work as the Coast grows.

The groups often fight development without offering solutions or compromise to elected leaders.

Frustrated by failure to sway government leaders on neighborhood issues, Taylor and the leaders of several other Harrison County and **Gulfport** residents' groups are joining forces. By early 2000, they plan to have in place the rough structure of what would be the first mega-residents' group. Initially, the group would try to unite residents in Harrison County, but it hopes to spread Coastwide.

A line in the SAND

"We're calling this group Seeking a New Direction, or SAND," said Walter Thomas, president of the Eulice N. White Civic **Association** in the Turkey Creek community of **Gulfport**. "We've been meeting every two weeks for about three months. We're still ironing out the bumps."

Like Taylor, Thomas has been frustrated in his civic group's fight against commercial encroachment on Turkey Creek. Although the Eulice White **Association** successfully forced the city to reverse a 1997 decision to rezone most of Turkey Creek for commercial use, **Gulfport** officials have recently approved several business developments in the area.

"We feel citizens should be represented at the table in an honest discussion about development," Thomas said. "There's just absolutely no point in pouring concrete all over everything. Everything doesn't have to be about the dollar, but that's all government leaders seem to be thinking about.

"SAND is about where we draw a line in the sand."

The groups represented so far at SAND meetings, in addition to the Eulice White **association** and CARD:

- Venetian Gardens: Residents in this **Gulfport** neighborhood have fought, unsuccessfully, a developer's plan to build two huge condominium towers nearby.
- **Gulfport** Concerned Citizens Coalition: This North

A call for unity

Leaders of several neighborhood residents groups, frustrated in their attempts to influence Coast governments, want to unite in hopes of increasing their clout with elected officials . For now, Seeking a New Direction is trying to pull together groups in Harrison County, but organizers say they would consider allowing members Coastwide. For more information, call Walter Thomas at 831-1497.

Political experts and local elected leaders offer advice for those forming residents groups:

Find leadership: "That's the first challenge in organizing a citizens group," said Joe Parker, USM political science professor. "There needs to be one person, or maybe two or three, who have the ability to take charge. It could be a retired general, former mayor or a housewife who has raised six children."

Be inclusive: "If you're going to err in who you involve in the process, err on the side of inclusion," said Mel Waxler, a business and community leader in Austin, Texas. "If you're trying to fight ego and turf issues in government, you don't want the same thing happening in your group."

Seek compromise: "If you just have a big group of people that's against

Gulfport group has fought city plans to build a sewer line through the community.

• People for the Preservation of Jones Park: This **Gulfport** group has fought a developer's plans to build a huge casino resort on city-owned harbor and park land.

Thomas, who began trying to form a broad-based residents' group last year, said leaders of other groups in **Gulfport** and Biloxi have also contacted him about joining.

everything, there's no substance, nothing to be done," said Larry Benefield, president of the Harrison County Board of Supervisors. "You have to be for something every once in awhile. Offer us some ideas, alternatives."

Beware of agendas: "The main thing to worry about is being co-opted by special interests," said Max Arinder, director of the state PEER Commission. "Some people want to push their own agenda for their own gain."

Thomas and Taylor said the goal of SAND is not to take over small residents' groups, but to serve as a support group and information clearinghouse. SAND members plan to begin videotaping government meetings in Harrison County and printing a newsletter.

SAND will work to hold politicians, government workers and the media accountable. SAND will have its biggest impact, Thomas and Taylor hope, during local elections.

If successful, SAND would accomplish something many people have tried to do with little success: make the Coast, with all its disparate governments and communities, think as one on big issues.

"Why, if they could get everyone together - old folks, young folks, black folks, white folks, tree huggers, right wingers, Democrats, Republicans - and get them to agree on something," said Joe Parker, a University of Southern Mississippi political science professor, "you would have city hall's worst nightmare. Government would have to listen. But forming that kind of coalition would be a daunting task."

Naysayers abound

"If they can do it, more power to them," said Kim Savant, **Gulfport** City Council president. "I haven't been able to do it, and I'm in government. Look at Coast 21. It was supposed to do that. It's still alive, but I wouldn't call it alive and well. It's just human nature for these groups to fizzle out and go home when their particular issue goes away."

Savant suspects SAND will mostly attract people angry at their local government - the same people who flock to government meetings now - and that the group will be more interested in a fight than in solutions or alternatives.

"One of the things that will hurt them is having people like Walter Thomas involved," Savant said. "He's negative about everything. The people who have the most influence on my decisions are those that approach me in a rational manner.

"I already listen to any group that comes before us. But if I'm intimidated by a small group of vocal people, then I'm not doing my job. I wasn't elected to have tunnel vision."

Larry Benefield, president of the Harrison County Board of Supervisors, also figures SAND

will represent only a minority who oppose growth.

"There are those who would have us go back to using a horse and buggy," Benefield said. "We can't base decisions on how many people a group can pack into a room. When we start having meetings at the Coliseum with 10,000 people there, then we might say we're hearing from the majority. That's why we have elections."

But **Gulfport** Councilwoman Ella Holmes-Hines, who says she will support SAND, thinks the recent proliferation of residents' groups should be sending a wake-up call to elected leaders.

"Everywhere I go, I hear discussions about growth and how we aren't managing it," Holmes-Hines said. "Anybody who can't hear it is tone deaf. So many of these groups call me now, I have to say, 'Hold on, give me your acronym again.'

"We will go down in history as the government that brought people back into government. But our method of bringing them back, infuriating them, is not an accomplishment. It's such a shame. We could use all that energy and interest they spend fighting us on dealing with growth instead."

Thomas and Taylor said SAND will not be an anti-growth and anti-development group that fights without offering alternatives.

"We just want thorough **planning**," said Taylor. "We want our government leaders to look at this time on the Coast as a watershed event, and think about what and where we want to be in 20 years. It needs to be planned carefully and zoned carefully. Right now, we're getting a hodgepodge."

TSH
Tuesday, August 22, 2000
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RESIDENTS ANGERED BY QUICK CHANGE ZONING MAP WOULD ALLOW GRAVEL PLANT

BY GEOFF PENDER / THE SUN HERALD

LONG BEACH --- Residents fighting a gravel plant in the Long Beach Industrial Park are angered by a last-minute change to Harrison County's zoning plan that could allow more intensive industrial development near their homes.

Members of the Citizens Association for Responsible Development say they were shocked this week to learn that a county zoning consultant had changed the final draft of a zoning map the Board of Supervisors is expected to approve next week. County officials had assured CARD members that the map would include light industrial zoning for 250 undeveloped acres in the Long Beach Industrial Park, but the map had been changed to allow general industry.

"This has been changed without any notice or any input from residents," said Jeffrey Taylor, CARD president. "The original designation of that park, when it was developed in the '70s with taxpayers' money, was light industrial . . . This is yet another step down the wrong road."

CARD is suing ***Conrad Yelvington*** Distributors Inc. and Harrison County to try to force the removal of ***Yelvington's*** gravel distribution plant from the industrial park. CARD members say the plant is noisy and dusty, increases traffic and decreases their property values. They fear more industrial development of the same kind would compound problems.

On Monday, county supervisors said they were also shocked by the change on the zoning map and that they are likely to change the park back to light industrial.

The light industrial designation includes businesses whose operations are contained indoors, such as manufacturing, storage or distribution plants that don't require water or heavy equipment for their processes. General industrial zoning allows industries that have outdoor operations and storage.

The Board of Supervisors will have final say on the zoning. Supervisors Marlin Ladner, Bobby Eleuterius and Connie Rockco said the county's zoning consultant apparently made the change without notifying the board.

"I will move to change that back to light industrial," said Ladner, who represents area residents. "I would absolutely oppose that park being heavy industrial."

Kenneth Groves Jr., a consultant helping draft the county's zoning plan, said he thought he had informed supervisors of the change but that he could be mistaken. He said he made the change

at the request of Mike Olivier, Harrison County Development Commission director.

Olivier said that Groves met with one of his employees, not him, about zoning the park for general industry. But Olivier said the industrial park should be zoned for general industry.

"I guess the Board of Supervisors can take this industrial park and turn it into a golf course if they so choose," Olivier said. "But they need to be considerate of the businesses that have already moved in here understanding that it was going to be an industrial park.

"I'm sorry. It is an industrial park. It has a railroad spur in it. The Development Commission has been extremely aware that residential growth has occurred around our industrial parks. We have tried to limit what kinds of businesses can go there. If they want to do something else with it, I need to know. I was told when I moved here that it is an industrial park."

TSH
Thursday, March 23, 2000
Section: LOCAL-FRONT
Page: A3

REPORT: PLANT FILLED WETLANDS COMPANY SAYS LAND WAS 'DRY AS A BONE'

BY GEOFF PENDER / THE SUN HERALD

Quote: "CARD believes the company and the county knew there was wetlands there. We are still tooth-and-nail fighting this inappropriate development and hope to get a court hearing as soon as possible to get a ruling against them."..... Jeffrey Taylor, CARD president.

A gravel distribution plant near Long Beach violated federal regulations by filling in 2 acres of wetlands near its rail-car unloading and storage operation, a U.S. Army Corps of Engineers report says.

A group of residents fighting to have the Conrad ***Yelvington*** Distributors Inc. plant moved from the nearby Long Beach Industrial Park says the violation is another example of why the plant shouldn't be there.

Conrad ***Yelvington*** says it didn't know the property was wetlands and has asked the Corps of Engineers for an "after-the-fact" permit to fill it in. The company promises to create more than 6 acres of wetlands on land it owns nearby to replace the lost habitat.

CARD to oppose plant's permit request

Citizens Association for Responsible Development, which is suing Conrad ***Yelvington*** and Harrison County to try to force the plant to relocate, says it will oppose the company's request for a permit.

"CARD believes the company and the county knew there was wetlands there," said homeowner Jeffrey Taylor, CARD president. "We are still tooth-and-nail fighting this inappropriate development and hope to get a court hearing as soon as possible to get a ruling against them."

But Britt Singletary, attorney for Conrad ***Yelvington***, said, "This area is small, and it was dry as a bone, where you couldn't tell. I assume it must be a drainage area if it's pouring down rain. It's not like they went in there and filled in a marsh. This is something the Corps of Engineers would have permitted had we asked for it beforehand."

The Corps of Engineers will take written comments about Conrad ***Yelvington's*** permit request through April 17, then decide whether to grant the permit or hold a public hearing. A corps spokeswoman on Wednesday said the agency seldom holds public hearings in such a case.

If the corps does not grant an after-the-fact permit, the company could face fines for the violation. But such permits are routinely granted.

Plant improvements don't satisfy everyone

CARD members say the ***Yelvington*** plant is noisy and dusty, increases traffic and decreases the values of their homes. They believe Harrison County should not have allowed it to open in the light industrial park, and are suing to overturn a December decision by the Board of Supervisors to allow the plant to stay.

But Singletary said the company has worked to reduce noise, dust and traffic. The county has placed restrictions on its operations.

At least one neighbor, Fred May, agrees that the plant has improved.

In November, May, a real estate developer building a subdivision about half a mile from the plant, sued ***Yelvington***. He claimed the plant was a public nuisance and damaging to his project. But May recently dropped his lawsuit.

"When the plant first opened, he was dealing with the noise, dust, vibration and heavy truck traffic," David Goff, May's attorney, said Wednesday. "That has changed. They did some things to quiet their machines, the county decided to build a road to keep trucks off Espy Avenue. For now, it's better. But (May) can still bring action in the future, if the plant's operations affect his property."

But Taylor, who lives much closer to the plant, says he's seen only meager improvements.

"This is only the beginning of their operation," he said. "It's not in full force yet. There are some overall principles here. First, it doesn't belong in a light industrial park. Second, it has already affected our property values. Plus, a concrete plant has already opened nearby, confirming our fears of what this will attract.

"At my house, playing outside with my children, I can hear the machines and the trees are coated with dust."

***Geoff Pender can be reached at 896-2329 or at glpender@sunherald.com

TSH
Friday, December 10, 1999
Section: LOCAL-FRONT
Page: A1

ROCK PLANT SAGA NEARS END
OPPONENTS WORK ON COMPROMISE

BY KEITH BURTON / THE SUN HERALD

GULFPORT -- A Pass Christian dentist and his neighbors who have fought to close a noisy and dusty gravel plant near their homes are helping negotiate a compromise that will allow the plant to remain open.

"Short of having the facility moved, we are negotiating the best possible deal for the residents," said Jeff Taylor, president of Citizens Association for Responsible Development. Taylor's organization has represented residents' interest in the fight against the plant owned by Conrad ***Yelvington*** Distributors Inc. The plant opened in mid-August in the Long Beach Industrial Park and almost immediately triggered protests from more than 300 homeowners nearby. The Harrison County Board of Supervisors was supposed to decide in a special meeting Thursday whether to approve a contract to allow the plant to remain in the industrial park. Instead, the board met privately with all the parties involved, including CARD.

Supervisors said they will vote on the compromise at a special meeting Dec. 21.

Residents at the meeting were resigned to the outcome, but most wanted the plant relocated.

"I'm going to have to live with it," said Audrey Pierson, who lives just east of the plant. "I'm not happy about it. We still feel the vibrations."

The vibrations are caused by machines at the plant that keep the gravel from sticking together when it is being unloaded from railroad cars.

CARD filed a lawsuit against the county and ***Yelvington*** to try to force the plant to move. If negotiations are successful, CARD may withdraw the lawsuit.

After the closed-door meeting, attorneys for all sides declined to discuss details of the negotiations.

However, any compromise is likely to restrict ***Yelvington's*** plans for the property, require a new access road that would take truck traffic off Espy Avenue, and include a berm, or hill, that would further reduce noise and limit visibility of the plant from the road.

"I would still like to see something decided on the vibrations," said Linda Wallace, who lives near the plant and is a member of CARD. "All the berms in the world would not keep my slab from

cracking."

CARD entered into the negotiations because some members felt the process had gone too far for the county to side with them, especially since the county had allowed ***Yelvington*** to begin business before the company had bought the land from the county. CARD felt a compromise might lead to the best conclusion possible for residents.

The whole ordeal has been a learning experience for the Harrison County Board of Supervisors. Board President Larry Benefield said supervisors plan to do a better job of listening to residents' concerns about growth. He said the ***Yelvington*** affair would have been easier to handle if the county had zoning regulations.

The county is in the process of establishing zoning to help guide development. Supervisors hope to hold public hearings early next year on the zoning regulations.

***Keith Burton can be reached at 896-2105 or at kburton@sunherald.com

TSH
Wednesday, December 8, 1999
Section: NATION & WORLD
Page: B2
Column: Editorials

WITH PARTIAL DATA, HARRISON'S VOTE ON AGGREGATE PLANT IS PREMATURE

T he Harrison County Board of Supervisors should postpone its vote on whether an aggregate distributor can continue operating in the Long Beach Industrial Park.

And when it does vote, it should reverse a previous decision to not allow citizens to voice their opinions about the plant. The board has scheduled a vote tomorrow on whether to accept a contract with Conrad ***Yelvington*** Distributors Inc. But it's obvious that the board needs more information to make an educated decision. In fact, even by admission of its hired consultants, the report on air and noise pollution is incomplete.

Since August, a group of nearby residents and concerned citizens has been trying to have the plant ousted, claiming that it is ruining their quality of life and lowering property values. So, the supervisors hired a group with Mississippi State University to measure the sounds coming from the plant's operations.

Vibrations are still an issue

High among residents' complaints has been a massive railcar-shaking apparatus. Dubbed the "Thunder Machine," the shaker jostles aggregate from the cars.

In its report, MSU's Diagnostic Instrumentation & Analysis Laboratory said that ***Yelvington*** has made the so-called Thunder Machine substantially less thunderous.

But, in the same paragraph, Charles A. Waggoner, manager of safety, excellence and environment for MSU's Diagnostic Instrumentation and Analysis Laboratory, writes:

"However, we are not sure that the locals have properly identified the most offensive noises. We suspect that the most offensive activities are not centered around unloading the rail cars, but rather, loading the large rock into dump trucks. We were not able to obtain sound level measurements of this activity. . . ."

The report also said another machine — in a pit under the cars — probably has been causing ground vibrations. The report added that the sound engineers did not measure the vibrations. But it said that a sound engineer hired by ***Yelvington*** has measured those vibrations and offered advice for reviewing those findings.

Without complete data, supervisors ought not vote

Air pollution is another of the neighbors' concerns.

And those concerns certainly aren't eased by a warning printed on the back of the plant's receipts. The warning reads, in part: "This product contains crystalline silica. Prolonged and repeated breathing of crystalline silica dust can cause a progressive lung disease called silicosis. Also, some researchers have reported that there is evidence that prolonged and repeated breathing of crystalline silica dust might cause lung cancer."

MSU's report on the dust suggests that the danger of breathing the dust from the plant is "more or less equivalent to walking on the beach."

But it also admits to uncertainty. "Without data it is impossible to give a comparable exposure. . . ."

Taxpayers' land; taxpayers' forum

The supervisors ought to vote on the future of ***Yelvington's*** operation in the Long Beach Industrial Park . . . but not until they understand the full consequences of their decision. Tomorrow is too soon.

No board member should cast a vote without the information provided by a thorough and complete study of the vibrations and the noise and air pollution of the surrounding neighborhoods. Even with that information, supervisors must measure the findings in terms of their impact on quality of life and property values. Noise and dust and vibration levels need not be beyond human tolerance to make life for neighbors miserable. And if they do, the plant should not be in that location.

Finally, when it does vote, the board must remember that the land in question is taxpayer-owned and, therefore, taxpayers must be allowed to speak their piece.

The editorials above represent the views of The Sun Herald editorial board: President-Publisher Roland Weeks Jr., Executive Editor Michael Tonos, Editorial Director Marie Harris, Associate Editor Tony Biffle and Editorial Writer Mark Seghers. Opinions expressed on these pages by columnists, cartoonists, and letter writers are their own and do not necessarily reflect the views of the editorial board.

TSH
Tuesday, November 16, 1999
Section: LOCAL-FRONT
Page: A7

OWNER OF GRAVEL PLANT SAYS LAWSUIT WON'T RUN HIM OFF
PLAINTIFFS SAY OPERATION IS ILLEGAL

BY KEITH BURTON / THE SUN HERALD

GULFPORT — The owner of a gravel distribution plant said Monday that he is not intimidated by a lawsuit that a citizens' group has filed to have his company evicted from the Long Beach Industrial Park.

"I'm not leaving," said Gary ***Yelvington***, president of Conrad ***Yelvington*** Distributors Inc. "I can't afford to move, but I can afford to fight."

The Citizens Association for Responsible Development Inc. filed the lawsuit late Friday afternoon against ***Yelvington***, the Harrison County Board of Supervisors, and the Harrison County Development Commission, alleging that the plant is operating illegally on the county-owned property.

Riley Morse, an attorney representing the citizens' group, said ***Yelvington*** is on the site illegally because neither the supervisors nor the Development Commission authorized the plant to be built — according to the minutes of both boards.

"This just gets worse and worse for the county and public," Morse said Monday.

The suit asks a Chancery Court judge to order ***Yelvington*** to cease operations at its plant and remove its structures. ***Yelvington*** and the county concede that they have no agreement for ***Yelvington*** to operate on the property.

The company doesn't have a lease, and is not paying the county rent.

"This is, in effect, giving away property without compensation," said Jeff Taylor, who lives near the plant and is president of CARD.

Since January, ***Yelvington*** has been negotiating with the Development Commission to swap land ***Yelvington*** owns for the county-owned land, but the process has been delayed because of required environmental permits. The tentative deal expires at the end of the year.

Yelvington says he will buy the county land if the agreement falls through. He also said he could move his entire operation to land the company owns just south of the industrial park property, which has already been cleared of trees, but he added, "I can't imagine I will be run off the property."

Yelvington's plant receives trainloads of rock and gravel, which is sold and then distributed by trucks. Noise at the plant disturbs nearby residents and shakes the ground under their homes. Residents also say the plant is incompatible with light industries in the park.

Documents filed in the lawsuit show ***Yelvington*** has violated wetlands laws. ***Yelvington*** said the company is working to meet the wetlands requirements.

"People do that all the time, either by mistake or intentionally," ***Yelvington*** said. "In our case, it was a mistake."

The Board of Supervisors had not received a copy of the lawsuit Monday afternoon, while Development Commission Director Mike Olivier did not return telephone calls about the lawsuit.

Supervisors are waiting for results of a noise study, expected in December, before they decide whether the county should force the plant to move from the property.

Real-estate firm cites subdivision

KEITH BURTON
THE SUN HERALD

GULFPORT - A second lawsuit has been filed in less than a week against the owners of a gravel distribution plant in the Long Beach Industrial Park.

May Investments LLC, a Pass Christian real estate firm, filed suit Tuesday against Conrad Yelvington Distributors Inc., claiming the rock plant is damaging property values. Fred May is the developer for Emerald Isles Subdivision on Demourelle Road, which is less than a half-mile west of the rock plant.

"We are concerned about the economic impact on the future sales of this very nice subdivision," said David Goff, the company's attorney.

The lawsuit alleges that the noise, dust, vibration and trucks associated with the plant amount to a public nuisance and cause "irreparable injury and actual damages" to May's development.

Yelvington's plant receives trainloads of rock and gravel, which is sold and then distributed by trucks. The company began operations in mid-August.

The suit asks a Chancery Court judge to order Yelvington to permanently close the plant and to compensate May for lost property value and profits from sales.

Yelvington was the only party named in May's lawsuit. On Friday, Citizens Association for Responsible Development Inc. filed suit against Yelvington, the Harrison County Board of Supervisors, and the Harrison County Development Commission. CARD alleges that the plant should be closed because it is operating illegally on county-owned property.

Gary Yelvington, the president of rock distribution company, said Monday that his company would fight lawsuits that seek to shut down the plant.

Keith Burton can be reached at (228) 896-2105 or at kburton@sunherald.com.

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TSH
Wednesday, July 19, 2000
Section: LOCAL-FRONT
Page: A1

CITY VOTES DOWN ROCK PLANT

BY TRACY DASH / THE SUN HERALD

GAUTIER — The Gautier City Council voted Tuesday night to deny the Planning Commission's recommendation to allow a gravel distribution plant to set up shop in the heart of the city.

The vote followed a three-hour discussion that included a presentation by the owners of the company, Conrad ***Yelvington*** Distributors Inc., and comments from most of the 100 residents who attended the meeting. The Planning Commission approved the location of the plant and recommended that the council issue a conditional use permit. But the majority of the council believes there are several issues that haven't been addressed either by the city or the company.

The company, which has 20 locations in several states including Mississippi, wants to build a distribution terminal on a 9.2-acre site on Old Spanish Trail. The property is a block south of U.S. 90 between Ladnier and Dolphin drives.

Conrad ***Yelvington*** contracts with CSX Railroad to transport aggregate, which is rocks, gravel and sand used in road construction and for making cement and concrete, to various businesses. The material is dropped off at the terminal by rail cars and is stored at the facility until it is carried off the property in trucks.

The proposed Gautier site is near two large consumers of aggregate, said company president Gary ***Yelvington***, which he believes makes the property the best location for him to build his business.

Yelvington also responded to concerns voiced by residents since they learned about his intent to build the terminal in Gautier.

Residents say they are worried about increased truck and train traffic, dust, noise and sound pollution, and health concerns. Residents also question whether the plant is light industrial, the zoning classification of that property.

The company faced opposition when it built its Long Beach terminal near a residential area. Some residents there said a machine used to empty the cars creates a loud noise and cited problems with excessive dust in the area.

While most residents who spoke at Tuesday night's meeting are opposed to the plant, one resident, Spencer Garrett, said he was impressed with the Long Beach facility.

"Things I expected to see, I didn't see," he said. But Garrett, who lives in Point Clear, still has a couple of concerns. He believes the plant should be located near the port and the council should ask itself if the city wants the plant.

Illustration: Infobox: The vote

Infobox: The vote

The Gautier City Council voted 4-2 to deny a request to allow a gravel distribution plant to build in the city.

*Mayor Charles Keith — No to deny.

*Councilman-at-large Ken Taylor — Yes to deny.

*Ward 1 Councilman Johnny Jones — Yes to deny.

*Ward 2 Councilman Hurley Ray Guillotte — Yes to deny.

*Ward 3 Councilman Jim Savage — Yes to deny.

*Ward 4 Councilman Bernie Phillips — No to deny.

TSH
Tuesday, July 18, 2000
Section: LOCAL-FRONT
Page: A2

CITY TO VOTE ON GRAVEL PLANT

OPPONENTS TO ATTEND TO VOICE THEIR CONCERNS

ROBIN FITZGERALD/SPECIAL TO THE SUN HERALD

GAUTIER — Residents who fear that a proposed gravel plant would create pollution say they plan to fight it at tonight's City Council meeting.

The Gautier Planning Commission has approved the location of a wholesale gravel distribution plant on Old Spanish Trail Road, a block south of U.S. 90 and the Singing River Mall. The nine-acre parcel is between Dolphin and Ladnier drives.
The area is zoned for light industry. City officials must decide whether the plant proposed by Conrad ***Yelvington*** Distributors Inc. qualifies as light or heavy industry. And they will hear complaints tonight from a number of concerned citizens.

"We fight for things that we believe are good for our city," said Paula Vassey. "A gravel plant isn't needed in Gautier. It isn't compatible with neighborhoods, and it doesn't fill a need that isn't already being served."

Vassey is one of several residents who are circulating petitions to protest the plant. More than 250 signatures had been obtained by late Monday.

Jackson County supervisors turned down a request for a similar plant last month, deciding the plant qualified as heavy industry.

Vassey and other opponents want city officials to rezone the area to community commercial development. "The city can't make any money from a wholesale company because it's exempt from paying the city sales tax," Vassey said.

Joyce Speed, another resident, points to research from the American Lung Association that links silica dust to silicosis, a dust disease.

Gautier residents also are worried that the plant would create noise, air and water pollution. Similar complaints have been lodged against the plant ***Yelvington*** opened in Long Beach last year.

A group of Long Beach and Pass Christian residents continue to fight the location of the gravel plant at the Long Beach Industrial Park. Citizens Association for Responsible Development has asked Harrison County officials to force the plant to move elsewhere.

Officials decided to keep the plant, but CARD is appealing the decision to Harrison County Circuit Court.

Yelvington, which has 15 locations in Florida, is one of the state's largest distributors of aggregate. Aggregate is rocks, gravel and sand used in road construction and for making cement and concrete.

Gautier planners have OK'd the plant under the condition that it operates the same as the one in Long Beach.

Yelvington plans several measures to control noise: a 25-foot buffer of trees around the property, a curtain that's 20 feet high to cover railway cars as aggregate is shaken into a pit with a conveyer belt, and a canvas pad for the shaker. The shaker is what members of CARD call the plant's loud, intermittent "thunder machine."

"The plant will make little, if any, noise and practically no dust," Singletary said.

The Gautier plant would be next to Mallett Brothers Construction Co., which buys gravel from the plant in Long Beach. ***Yelvington*** plans to build a road parallel to the CSX railroad so trucks can deliver loads directly to Mallett without creating additional traffic on the main road.

**Robin Fitzgerald can be reached at 818-4517.

Council meeting tonight

The location of a gravel plant in an area zoned for light industry will be discussed at tonight's meeting of the Gautier City Council.

What: Conrad Yelvington Distributors Inc. is seeking a conditional use permit to locate a gravel plant off Old Spanish Trail between Dolphin and Ladnier Drives.

When: 6:30 p.m., regular council meeting.

Where: Gautier City Hall on U.S. 90 near the west entrance to the city.

Details: City Hall, 497-2332.

TSH
Thursday, July 13, 2000
Section: NATION & WORLD
Page: B2
Column: Editorials

FROM TIME TO TIME COAST SHOULD REVISIT VISION FOR GROWTH

Next week, Coast leaders should watch closely as a handful of elected officials decide what kind of city Gautier will become.

On the surface, the City Council's decision revolves around obtuse definitions of zoning ordinances. But deep down, its decision will reveal how the city's leaders plan to adapt to the changing times. Communities are growing beyond the vision of their original zoning ordinances — if they have zoning at all — and neighborhoods increasingly are abutting business sectors.

If communities are serious about balancing industry and quality of life, their elected officials must sometimes adjust their zoning — not fritter the ordinances away with variance after variance.

Old plans don't always fit new situation

The Gautier City Council on Tuesday will decide whether to give special permission to a gravel distribution company that wants to set up shop in an industrial area in the heart of Gautier.

Florida-based Conrad ***Yelvington*** Distributors wants to open a smaller version of its controversial aggregate distribution plant in the Long Beach Industrial Park in Harrison County.

That plant has supporters and detractors. Some of the latter are trying to convince a judge to order the Harrison County supervisors to reconsider their decision to allow the plant.

Company president Gary ***Yelvington*** claims that his company has accommodated all but the most vociferous Long Beach and Pass Christian neighbors.

Still, long-term plans for the Long Beach Industrial Park exemplify the kind of growth happening on the Coast.

Nestled in the middle of residential areas, the industrial park is home to quiet manufacturing, thousands of pine trees, and now an aggregate plant.

Eventually, the county plans to turn the park into a multi-modal distribution center — virtually a warehouse for the state port in Gulfport.

Far away on the eastern side of the Coast in Gautier, ***Yelvington*** said his distribution plant would keep truck traffic within the industrial zone.

This, he said, would reduce traffic on city roads and lower prices for the aggregate, a necessary commodity in the construction industry.

Beyond profits, traffic and zoning

But the larger question has less to do with aggregate prices and traffic and plenty to do with how Gautier residents want their city to grow.

It's the same challenge facing every city along the Coast since times changed back in the early 1990s, when a strong national economy and legalized gambling caused growth to go into overdrive.

Said Gautier's director of Community Services Ralph Hode: "This entire Gulf Coast is going through a transition that is unparalleled.

"All that, whether it is bad or good, is really not something we can do anything about," he said. "The question is, is it time to revisit your ordinances . . . to better accommodate the growth that's taking place in your city?

"A lot of cities are going through this, not just Gautier," Hode said. He believes that ordinances must regularly be refined to fit a community's vision.

Hode is right. This "revisit" is the wise move to accommodate all those involved in the development of the Coast.

To be fair to industry, zoning regulations must be straightforward and bureaucracy responsive.

To be fair to residents, elected officials must lead the effort to adapt a community vision to the reality of the times.

And, when they do, they must seek out broad input from the community-at-large, judging not only the merits of one business in one particular location, but its impact upon the whole community.

The editorials above represent the views of The Sun Herald editorial board: President-Publisher Roland Weeks Jr., Executive Editor Stan Tiner, Editorial Page Editor Marie Harris, Associate Editor Tony Biffle and Editorial Writer Mark Seghers. Opinion expressed by columnist, cartoonist, and letter writers on these pages are their own and do not necessarily reflect the views of the editorial board.

Illustration: Infobox: To the point

Infobox: To the point:

Write or rewrite zoning ordinances to steer growth in a planned direction rather than allowing a jumbled patchwork of variances.

TSH
Thursday, July 27, 2000
Section: LOCAL-FRONT
Page: A2

GRAVEL YARD TO TAKE CITY TO COURT

BY KAREN NELSON / THE SUN HERALD

GAUTIER — Conrad ***Yelvington*** gravel yard is taking Gautier to court, saying it has the right to locate downtown according to the city's laws.

The company filed papers Wednesday appealing to Jackson County Circuit Court the decision the Gautier City Council made on July 18. The council voted against allowing the company to put its plant along Old Spanish Trail in the heart of the city. The appeal says the property is zoned light industrial and the plant is just that. And it also accuses the council of making its decision on a whim and not following the law.

"There were 100 people screaming at the public officials when they made the decision," said Britt Singletary, attorney for Conrad ***Yelvington***. "It was absolute political fear inflicted on them. It's a miserable position to be in."

Worried about the noise, the ground vibration and the dust that is likely to come from a gravel distribution plant, residents of the city filled City Hall the night the decision was made, saying they didn't think Gautier needed that type business downtown.

Singletary contends that the council, under pressure, made the wrong call legally.

City Attorney Bob Ramsay disagrees. He said Wednesday that the city is ready to argue that the gravel yard is not a permitted use under the terms of the zoning laws and that the company does need more than a simple permit before it can move into Gautier. It needs a "conditional use" permit, which requires a vote of the council.

"They had legitimate reasons for voting it down," said Ramsay. One thing, he pointed out was that the plant likely would increase the traffic of heavy trucks on the city's roads and highways. The city Planning Commission, however, did recommend in a 5-1 vote that the company receive the permit it needs.

The issue has been a hot topic in the young city that depends on retail sales for a large portion of its income and is still trying to determine its identity and direction.

The zoning that the city has in place essentially sets aside a large portion of downtown as an industrial park of sorts.

The strip of property that is zoned for light industry is only one street south of the Singing River Mall and U.S. 90 and is north of several of the city's largest subdivisions. But the area already includes an asphalt plant and a concrete plant.

Some city councilmen and residents say the zoning needs to be changed, that it's archaic and that the city essentially copied zoning the county had put into place previously. But Singletary and others say the city can't change zoning now just to exclude one industry.

"I told them, when you set up this city, you set up a comprehensive zoning plan," said Singletary. "You zoned every inch of this city, and you zoned this for light industry. We're light industry. We don't need a zoning change; we just need a permit."

***Karen Nelson can be reached at 875-9109 or at klnelson@sunherald.com

December 4, 1998

Property proposed for rock business

By JUD MAGRIN
Sun Staff Writer

Conrad Yelvington, the largest distributor of crushed rock in Florida, has plans to build a distributorship on 45 acres along the CSX railroad in north Gainesville.

A Gainesville distributorship would be the 16th for Conrad Yelvington Distributors Inc. in Florida. Other sites include Ocala, Pensacola, DeFuniak Springs, Jacksonville, Orlando, Tampa, Largo and Miami. Depending on the site, the firm distributes river gravel, Florida limestone, Alabama limestone, granite, sand, baserock and sod.

The site for the proposed distributorship is a thin, 45-acre parcel that stretches between State Road 121, in the 7600 block, and U.S. 441, and sits alongside the railroad. Normally, rock and other raw material is brought to these facilities and, if necessary, is crushed and made ready for the construction industry. The site is generally in an industrial area but is also near the Buck Bay Mobile Home Community and the Hidden Lake residential development, both of which are located on the opposite side of SR 121.

The property, now owned by the Nekoosa Packaging Corp., is zoned agriculture. The Gainesville City Plan Board will hear a request Dec. 17 to rezone it for industrial use. Property owners within 400 feet of the proposed development have been notified of the meeting.

City planners and engineers for Conrad Yelvington say it is going to be a "major distribution center" for aggregate that will initially employee 10 people. Construction could begin in the fall of 1999.

Gary Yelvington and other officials at Conrad Yelvington Inc., based in Daytona Beach, didn't return several phone calls. Ralph Eng of Gainesville is the engineer on the project. He said it is essential that the distributorship be located next to the railroad so the raw and finished product can be transported. "Right now there really isn't a big distribution center in this area," Eng said.

Documents submitted to the city concerning the rezoning and proposed project state that noise and lighting from the distributorship would be "insignificant."

Earlier this year, company owner Conrad Yelvington faced misdemeanor charges for allegedly violating Marion County's noise ordinance. According

to the Ocala Star-Banner, noise from a rock shaker disrupted a nearby neighborhood at 2002 SW 5th Ave. in Ocala. A rock shaker rattles train cars to help empty loads.

Conrad Yelvington was scheduled for trial in May but County Judge Sandra Edwards-Stephens threw out the case after attorneys on both sides agreed that the ordinance was unconstitutional as applied to Yelvington.

Conrad Yelvington began the business in 1948, buying and selling loads of fill dirt in Central Florida. It grew to transporting sod, dirt and oyster shells used for drain fields. Conrad Yelvington's son, Gary, joined efforts with his father in 1977.

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SUN HERALD
Tuesday, August 1, 2000
Section: NATION & WORLD
Page: C4
Column: Editorials

USE DRAWING BOARD, NOT COURT, TO PLAN OUR FUTURE

Last week in Gautier, the Coast's elected officials got another good lesson in the need for creating solid plans — and sticking to them.

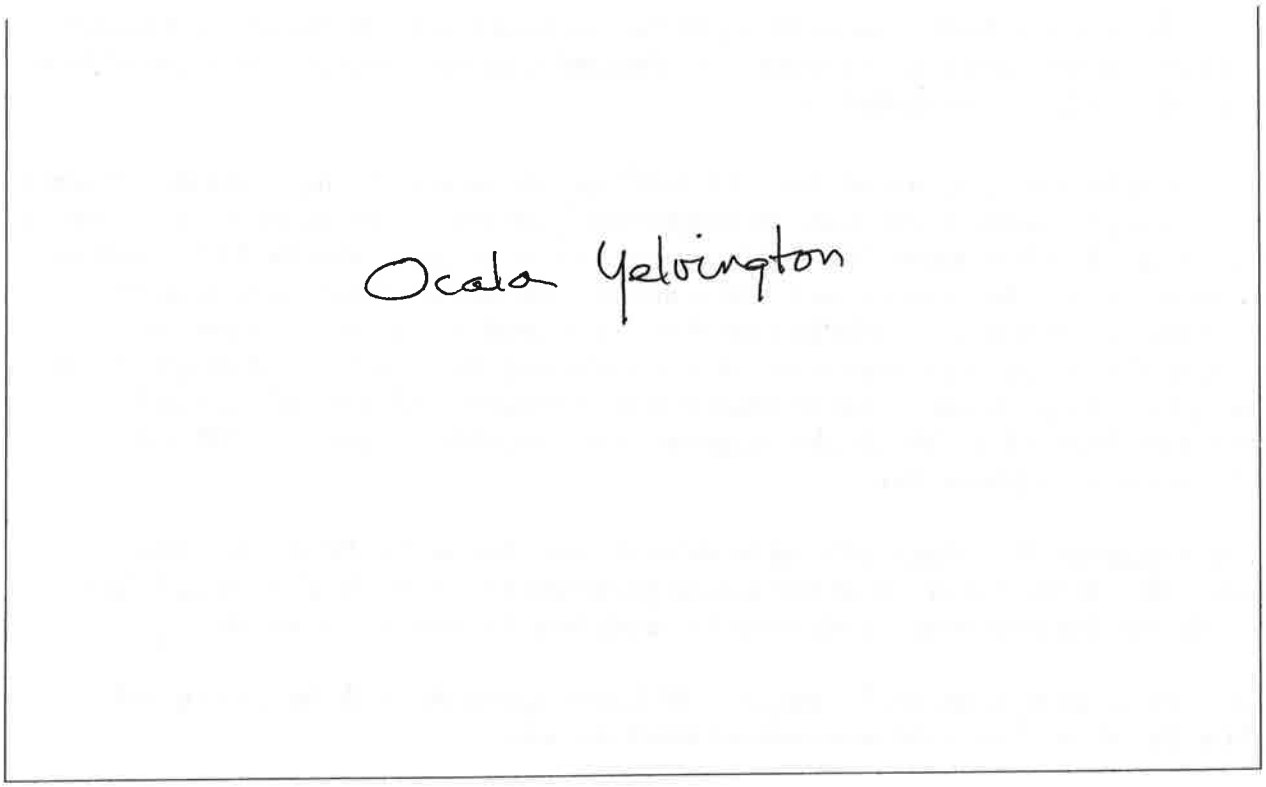
The City Council, after hearing the concerns of about 100 residents, voted to not let a gravel distributor set up shop in the heart of Gautier. Conrad ***Yelvington*** Distributors Inc. of Florida now is asking a court to reverse the Council's decision.

Yelvington's attorney argued that the company has a right to operate on the city property and that the Council submitted to "political fear" of the 100 or so residents who opposed the plant.

This is the second time ***Yelvington's*** ambition to compete in the Coast gravel market has cropped up in a Coast courtroom. A group of residents in Harrison County awaits a court date to argue that the Board of Supervisors shouldn't have let ***Yelvington*** set up in the Long Beach Industrial Park.

Of course, parties on all sides have the right to bring their cases to court. But if elected leaders were more proactive about writing concise zoning laws — and sticking to them — both developers and residents would not have to go to court to obtain a clearer understanding of what best suits a community's development.

The editorials above represent the views of The Sun Herald editorial board: President-Publisher Roland Weeks Jr., Executive Editor Stan Tiner, Editorial Page Editor Marie Harris, Associate Editor Tony Biffle and Editorial Writer Mark Seghers. Opinion expressed by columnist, cartoonist and letter writers on these pages are their own and do not necessarily reflect the views of the editorial board.



Zoning - 3. (Z. C. 991005Z) - The Board considered a petition by **Yelvington** Limited Company, 800 Big Tree Road, South Daytona Beach, FL, requesting a Zoning Change of the Marion County Land Development Code, Article 5, from R-3 (Multiple Family Dwelling) to B-5 (Heavy Business) for the intended use of outdoor storage and distribution of limerock, sand, gravel, clay and other mineral resources, and any other use permitted in a B-5 zone, on Parcel No. 30830-000-00.

Located: Go west on SW 17th Street from Pine Avenue (US 441/301/27) to SW 5th Avenue. Turn south on SW 5th Avenue to SW 23rd Street. Property is to the west.

PERCENT WRITTEN OPPOSITION WITHIN 300 FEET: 1 of 31 = 3%

ZONING COMMISSION RECOMMENDATION: Motion was made by Mr. Albright, seconded by Mr. Scroggie, to agree with staff findings and recommendation and recommend approval of a Zoning Change from R-3 to B-5 for the intended use of outdoor storage and distribution of limerock, sand, gravel, clay, and other mineral resources, and any other use permitted in a B-5 zone. Motion carried by a vote of 7-0.

Planner Flynn stated that based on analysis and findings, staff recommended approval of rezoning from R-3 to B-5.

John McKeever, attorney representing the petitioner, stated that rezoning and a Special Use Permit were the next step after recent approval of the Comprehensive Plan land use amendment. He stated that **Yelvington** could then use the 4.7 acre parcel for outdoor storage and distribution of mineral resources on the northern portion. He noted the Zoning Commission recommended a change in condition #2 of the Special Use Permit. Mr. McKeever stated that a large portion of the parcel would

be a water retention area. In response to inquiry by Commissioner Harris, Mr. McKeever stated the standard buffer requirements of the Comprehensive Plan and Land Development Code provided for a twenty-five foot buffer in a residential area.

Upon call for public comment, Win Sheldon, NW 160th Avenue, presented a map of the area obtained from the Planning Department. She stated she had previously presented evidence regarding the type of business conducted by **Yelvington**. Ms. Sheldon stated the noise level exceeded the 80 decibel limit and that no buffer from the crusher noise had been installed. She stated no businesses should be allowed in the residential area. Ms. Sheldon stated that she wanted to be actively involved in development of the property and was concerned it would be sold. She stated that she disagreed with staff findings that the proposed use was compatible with surrounding land uses and was consistent with the Comprehensive Plan. Ms. Sheldon requested that all property owners within 300 feet be notified of future development plans.

Keith Flores suggested that other conditions be included on the Special Use Permit, such as a vegetative buffer, installation of a noise monitor and preservation of trees. Mr. Flores stated that it appeared the flooding issue would be addressed by installation of a water retention area.

In response to inquiry by Chairman Townley, Mr. McKeever agreed that both the rezoning and Special Use Permit petitions could be considered simultaneously.

4. (Z. C. 991006SU) - The Board agreed to consider the petition by **Yelvington** Limited Company for a Special Use Permit of the Marion County Land Development Code, Section 5.2, for the purpose of outdoor storage and distribution of limerock, gravel, clay and other mineral resources in a B-5 (Heavy Business) zone, on Parcel No. 30830-000-00.

> Located: Go west on SW 17th Street from Pine Avenue (US 441/301/27) to SW 5th Avenue. Turn south on SW 5th Avenue to SW 23rd Street. Property is to the west.
>
> PERCENT WRITTEN OPPOSITION WITHIN 300 FEET: 2 of 31 = 6%
>
> ZONING COMMISSION RECOMMENDATION: Motion was made by Mr. Albright, seconded by Mr. Herren, to agree with staff findings and recommendation with the following rephrasing of Condition No. 2, and recommend approval of a Special Use Permit in a B-5 zone for the purpose of outdoor storage and distribution of limerock, sand, gravel, clay, and other mineral resources:
>
> Condition No. 2: The Special Use Permit is intended to operate in conjunction with the use of the adjoining M-1 parcel immediately north of the site and shall become void if the operation on the site is severed from such adjoining parcel.
>
> Motion carried by a vote of 7-0.

Planner Flynn stated that based on analysis and findings, staff recommended approval of the Special Use Permit with the following conditions:

The site shall be developed and operated consistent with the submitted conceptual site plan and the conditions as provided with this approval.

The Special Use Permit applies to **Yelvington** Limited. Any future sale of the subject property shall void the Special Use Permit.

Access for the pick-up and delivery of material shall be from the existing **Yelvington** Ltd. aggregate operation access on SW 5th Avenue.

In response to inquiry by Commissioner Henning, Ms. Sheldon proposed that the percent in opposition to the petition was low because residents were tired of opposing the issue.

In regard to buffer issues, Mr. McKeever proposed that it be deferred until the site was designed to determine the appropriate type of buffer. He stated that upon completion of the facility, the owner could provide test results to the Zoning Department showing the buffer would obscure the noise. Mr. McKeever stated there would not be a rock crusher on the 4.7 acre tract. Mr. McKeever stated the three conditions recommended by the Zoning Commission should be included on the Special Use Permit and suggested the following additional condition: Following completion of construction and installation of a buffer, a sound test will be conducted to determine whether the buffering of noise was consistent with the noise ordinance and a copy shall be filed with the Zoning Department. He stated the Board should not limit the Special Use Permit to **Yelvington**, and should include condition #2 recommended by the Zoning Commission.

A motion was made by Commissioner Henning, seconded by Commissioner Johnson, to approve rezoning from R-3 to B-5 based on Zoning Commission and staff recommendations and findings that the proposed use was compatible with the surrounding land uses, was consistent with the Comprehensive Plan, and would not adversely affect the public interest. The motion was approved by the Board on a 4-1 vote, with Commissioner Harris voting nay.

Commissioner Harris stated that he could not support the motion because he was concerned with the number of homes with "For Sale" signs on SW 5th Street in the immediate area of the **Yelvington** business. He stated that when the Board originally approved the zoning, he was confident that Commissioners were not aware that a shaker would be operated near the residential area, which was not compatible. Commissioner Henning noted that rezoning addressed the issue of land use, not the issue of noise.

A motion was made by Commissioner Johnson to adopt Resolution 99-R-247 granting the Special Use Permit with staff recommendations and conditions #1 and #3, and the following additional conditions:

The Special Use Permit is intended to operate in conjunction with the use of the adjoining M-1 parcel immediately north of the site and this Special Use Permit shall become void if the operation of the site is severed from such adjoining parcel.

Upon completion of construction, including required buffering, the applicant

shall conduct tests to determine whether the buffering of noise is occurring consistent with the County noise ordinance, and the results of such test shall be provided to the Zoning Director.

The motion was seconded by Commissioner Harris for discussion purposes. In response to inquiry by Commissioner Harris, **Gary Yelvington**, President of **Yelvington**, Daytona Beach, stated it would not be practical to install a sound monitor due to the noise from the rock crusher on the adjacent parcel. Commissioner Johnson pointed out that the petitioner must show evidence of compliance with the Noise Ordinance. The motion was approved by the Board on a 4-1 vote, with Commissioner Harris voting nay.

Zoning - 5. (Z. C. 991003SU) - The Board considered a petition by Edward and Adrienne Israel, 4100 SW 86th Terrace, Ocala, FL, requesting a Special Use Permit of the Marion County Land Development Code, Section 5.2, for the purpose of private indoor aviary for small birds, cockatiels and lovebirds, in existing building in an A-1 (General Agriculture) zone, on Parcel No. 21358-011-00.

Located: SR 200 West to SW 38th Court. Turn right to SW 80th Avenue. Turn right one block on SW 34th Place. Turn left one block to SW 86th Terrace. Turn left to 4100 SW 86th Terrace, on right just past crest of hill.

PERCENT WRITTEN OPPOSITION WITHIN 300 FEET: 4 of 11 = 36%

ZONING COMMISSION RECOMMENDATION: Motion was made by Mr. Scroggie, seconded by Mr. Herren, to agree with staff findings and recommendation, with the following addition to Condition No. 4, and recommend approval of a Special Use Permit in an A-1 zone for the purpose of a private indoor aviary for small birds, cockatiels, and lovebirds in an existing building.

Condition No. 4: The aviary shall be limited to cockatiels, lovebirds, parakeets, or birds of a similar size with a limit of 30 birds.

Motion carried by a vote of 7-0.

Planner Flynn stated that based on analysis and findings, staff recommended approval of a Special Use Permit with the following conditions:

The site shall be developed and operated consistent with the submitted conceptual site plan and the conditions as provided with this approval.

No commercial sales of birds shall occur on-site.

Delivery of any supplies by any outside party necessary to the proper function of the aviary shall be prohibited.

Are Other Health Effects of Silica Exposure Being Overlooked?

by
David F. Goldsmith, PhD
Public Health Institute

The National Conference to Eliminate Silicosis March 23-25, 1997 in Washington DC enjoyed a splendid turnout of over 600 attendees. In my opinion, the conference attention on silicosis to the exclusion of discussion of other silica health effects was very shortsighted . However, I was delighted by the opening remarks by NIOSH Director, Dr. Linda Rosenstock, who pointed out that we now know that silica exposure is a risk factor for several "new" conditions, and that deliberations should be expanded to consider other health problems such as cancer, autoimmune diseases, nephritis and other kidney diseases, and tuberculosis (TB).

What is the evidence for these other conditions? Last month the International Agency for Research on Cancer (IARC) changed the classification of silica from 2A (probable human carcinogen) to 1 (known human carcinogen). The change to IARC Type 1 means that occupational silica dust exposure is considered like other known human carcinogens such as asbestos, vinyl chloride, radon daughters, smoking, and DES. It means that companies are likely to change their Material Data Safety Sheets (MSDS), that workers need to be informed, and that where there are alternatives to silica (such as sandblasting) that they need to be sought out. The change in IARC status does not mean that the controversy about carcinogencity is over, but it does mean that the evidence is sufficient to convince a group of IARC experts that silica increases the risk of lung cancer. Furthermore, it goes a long way to meeting the criteria for causation we use in epidemiology. There is other evidence to suggest that silica is linked to stomach cancer, lymphatic cancers, and skin cancer, though the IARC focus was on pulmonary malignancies.

The other health effects are not "new," but we now have good epidemiology studies of recent vintage showing that silica exposure (with and without silicosis) is linked with several autoimmune conditions which previously there were only case studies: rheumatoid arthritis, scleroderma, Sjogrens' syndrome, and lupus. There is also accumulating epidemiology evidence that occupational silica exposure is linked with kidney diseases such as nephritis and end-stage renal disease.

With a narrow focus on silicosis, we tend to overlook serious conditions that often accompany silicosis--silicoTB and cor pulmonale (enlargement of the heart muscle). Although these two secondary effects of silicosis are declining in the U.S. (as is

silicosis), they remain killers of relatively young workers in developing countries and in China and former Soviet Union. Sadly we also must acknowledge the epidemic of acute and accelerated silicosis that descended upon Mexican workers in the Midland-Odessa, Texas area in the early part of the 1990s, some 60(!!) years after the Gauley Bridge disaster. These men were vastly overexposed to silica, without any protection, in several oil pipe sandblasting operations, and they have many of the autoimmune ailments as well as fatal silicosis.

Thus, the silicosis prevention we all hope to achieve should include these other diseases: cancer, autoimmune illnesses, kidney diseases, and TB. Furthermore, the employees we need to communicate with about this hazard must receive information in languages of the workers at risk, not in English only.

David F. Goldsmith, PhD
Public Health Institute
2001 Addison Street, 2nd Floor
Berkeley, CA 94704-1103 USA
davegold@publichealth.org

Environmental Health Perspectives Volume 107, Supplement 5, October 1999

Occupational Exposure to Crystalline Silica and Autoimmune Disease

Christine G. Parks,[1,2] Karsten Conrad,[3] and Glinda S. Cooper[1]

[1]Epidemiology Branch, National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina USA; [2]Department of Epidemiology, School of Public Health, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina USA; [3]Institut für Immunologie, Medizinische Fakultät Carl Gustav Carus, Technische Universität Dresden, Dresden, Germany

Abstract

Occupational exposure to silica dust has been examined as a possible risk factor with respect to several systemic autoimmune diseases, including scleroderma, rheumatoid arthritis, systemic lupus erythematosus, and some of the small vessel vasculitidies with renal involvement (e.g., Wegener granulomatosis). Crystalline silica, or quartz, is an abundant mineral found in sand, rock, and soil. High-level exposure to respirable silica dust can cause chronic inflammation and fibrosis in the lung and other organs. Studies of specific occupational groups with high-level silica exposure (e.g., miners) have shown increased rates of autoimmune diseases compared to the expected rates in the general population. However, some clinic- and population-based studies have not demonstrated an association between silica exposure and risk of autoimmune diseases. This lack of effect may be due to the limited statistical power of these studies to examine this association or because the lower- or moderate-level exposures that may be more common in the general population were not considered. Experimental studies demonstrate that silica can act as an adjuvant to nonspecifically enhance the immune response. This is one mechanism by which silica might be involved in the development of autoimmune diseases. Given that several different autoimmune diseases may be associated with silica dust exposure, silica dust may act to promote or accelerate disease development, requiring some other factor to break immune tolerance or initiate autoimmunity. The specific manifestation of this effect may depend on underlying differences in genetic susceptibility or other environmental exposures. *Key words*: antineutrophil cytoplasmic antibodies, antinuclear antibodies, nephritis, rheumatoid arthritis, scleroderma, systemic lupus erythematosus, Wegener granulomatosis. -- *Environ Health Perspect* 107 (suppl 5):793-802 (1999).

http://ehpnet1.niehs.nih.gov/docs/1999/suppl-5/793-802parks/abstract.html

This article is based on a presentation at the Workshop on Linking Environmental Agents and Autoimmune Diseases held 1-3 September 1998 in Research Triangle Park, North Carolina.

Address correspondence to C. Parks, Epidemiology Branch, National Institute of Environmental Health Sciences, MD A3-05, PO Box 12233, Research Triangle Park, NC 27709. Telephone: (919) 541-3445. Fax: (919) 541-2511. E-mail: parks@niehs.nih.gov

Work conducted by C. Parks and G. Cooper is supported through the Intramural Research Program at the

National Institute of Environmental Health Sciences. K. Conrad's work was supported by the Saxon Ministry for Science and Art (Sächsisches Ministerium für Wissenschaft und Kunst), AZ 4-7541.82-0450/405, and is currently supported by the Federal Institute for Occupational Safety and Health, Department of Occupational Health, Berlin, project no. 1267.

Received 8 February 1999; accepted 28 May 1999.

[Table of Contents] [Full Article] [Citation in PubMed] [Related Articles]

Last Updated: September 23, 1999

Subj: **Re: Yelvington Distributors**
Date: 2/9/01 10:37:13 AM Eastern Standard Time
From: reimo@earthlink.net (Reilly Morse)
To: ArtistKaty@aol.com, gumdr@datasync.com, henry.kinney@kinneylaw.com

on 2/8/01 9:10 PM, ArtistKaty@aol.com at ArtistKaty@aol.com wrote:

> Dear Reilly,
>
> I am interested in contacting the citizens involved with the Yelvington Distributors in Long Beach, Mississippi if that is possible and wondered if you might be able to help me. I've read the articles in the Sun Herald about you representing the group CARD in trying to get Yelvington to relocate their plant in Long Beach.
>
> Two years ago Yelvington Distributors rezoned the property next to the light Industrial park where we have our business and I recently learned that they want to add an asphalt plant and concrete batch plant right next to our property. We had no idea of the impact that this plant might have on our community when the zoning occurred.
> I'm trying to learn as much as I can before everything is final.
>
> I am wondering if there is some way we might be able to help you with your efforts in your community and perhaps you could also educate us in terms what to expect once the plant is operating.
>
> Thank you for your time.
>
> Katy Fischer
> owner and artist of the Calligraphy Collection
> Gainesville, Florida
> website at Calligraphycollection.com
> 800-854-4801

Dear Katy:

When CYI proposed to locate in Mississippi, it stated that it would attract other industries such as asphalt and concrete manufacturing facilities. The CARD group fought hard to stop CYI from locating in the park at all, and has an appeal pending on the Board of Supervisors' decision. One of the conditions the Board put into place was a prohibition of asphalt or concrete manufacturing facilities in the rest of the Park, and a requirement that CYI record a restrictive covenant barring construction of such facilities on its own adjacent property. At this point, I believe CYI still has not recorded the restrictive covenant.

Let me know how we can help.

Reilly Morse

---------- Headers ----------

OSHA Fact Sheets

01/01/1996 - Silica Dust Exposures Can Cause Silicosis

OSHA Fact Sheets - Table of Contents

- **Record Type:** Fact Sheets
- **Subject:** Silica Dust Exposures Can Cause Silicosis
- **Information Date:** 01/01/1996
- **Fact Sheet:** 96-54

U.S. Department of Labor
Program Highlights

Fact Sheet No. OSHA 96-54

SILICA DUST EXPOSURES CAN CAUSE SILICOSIS

Every year two million workers in the U.S. are exposed to crystalline silica, which can cause silicosis, a disabling and sometimes fatal disease. About 300 deaths are attributed to silicosis annually. Inhaling airborne crystalline silica dust also has been associated with other diseases such as tuberculosis and lung cancer.

The Occupational Safety and Health Administration (OSHA) is determined to reduce the potential threat of silicosis. Crystalline silica has been identified as a priority rulemaking action. In the meantime, OSHA is conducting a national special emphasis program on silicosis to inform employers and employees about the occurrence and hazards of crystalline silica and ways to reduce exposure to the dust. The 25 states and territories that operate their own occupational safety and health programs have been encouraged to launch similar special emphasis activities on silicosis.

Crystalline silica, also known as quartz, is a natural compound in the earth's crust and is a basic component of sand and granite. Silicosis is a disease of the lungs caused by breathing dust containing crystalline silica particles. The dust can cause fibrosis or scar tissue formations in the

lungs that reduce the lungs' ability to work to extract oxygen from the air. There is no cure for this disease, thus prevention is the only answer.

SYMPTOMS OF SILICOSIS

Early stages of the disease may go unnoticed. Continued exposure may result in a shortness of breath on exercising, possible fever and occasionally bluish skin at the ear lobes or lips. Silicosis makes a person more susceptible to infectious diseases of the lungs such as tuberculosis. Progression of silicosis leads to fatigue, extreme shortness of breath, loss of appetite, pain in the chest, and respiratory failure, which may cause death. Acute silicosis may develop after short periods of exposure. Chronic silicosis usually occurs after 10 or more years of exposure to lower levels of quartz.

WHERE ARE EMPLOYEES EXPOSED TO CRYSTALLINE SILICA DUST?

The most severe worker exposures to crystalline silica result from sandblasting.

In general industry, the sandblasting may be done to clean sand and irregularities from foundry castings, finish tombstones, etch or frost glass, or remove paint, oils, rust or dirt from objects that will be repainted or treated.

Other exposures to dust from sand in general industry employment occur in cement manufacturing, asphalt pavement manufacturing, and the foundry industry. Crystalline silica is used in the electronics industry and in manufacturing abrasives, paints, soaps, and glass. Calcined diatomaceous earth, often contaminated with crystalline silica, can be used for filtration in a variety of applications.

In the construction industry, sandblasting may be done to remove paint and rust from stone buildings, metal bridges, tanks, and other surfaces. Other construction activities that may produce crystalline silica dust include jack hammer operations, rock/well drilling, concrete mixing, concrete tunneling, and brick and concrete block cutting and sawing. Tunneling operations, repair or replacement of linings of rotary kilns and cupola furnaces; and setting, laying, and repairing railroad track also are potential sources of exposure.

In the maritime industry, exposure to crystalline silica occurs primarily in abrasive blasting operations such as in removing bottom fouling organisms from paint.

Employers are required to provide and assure the use of appropriate controls for crystalline silica-containing dust. OSHA has a Permissible Exposure Limit (PEL), which is the maximum amount of airborne crystalline silica that an employee may be exposed to during a work shift. Employers are to use all available engineering controls such as water sprays, blasting cabinets, and ventilation of containment structures.

WHAT CAN EMPLOYEES DO TO LIMIT THEIR EXPOSURE TO CRYSTALLINE SILICA?

* Be aware of the health effects of crystalline silica and that smoking adds to the damage.

* Know the work operations where exposure to crystalline exposure may occur.

* Participate in any air monitoring or training programs offered by the employer.

* Use type CE positive pressure abrasive blasting respirators for sandblasting.

* For other operations where respirators may be required, use a respirator approved for protection against crystalline silica-containing dust. Do not alter the respirator in any way. Workers who use tight-fitting respirators cannot have beards or mustaches which interfere with the respirator seal to the face.

* If possible, change into disposable or washable work clothes at the worksite; shower (where available) and change into clean clothing before leaving the worksite.

* Do not eat, drink, use tobacco products, or apply cosmetics in areas where there is dust containing crystalline silica.

* Wash your hands and face before eating, drinking, smoking, or applying cosmetics outside of the exposure area.

WHERE CAN I GET MORE INFORMATION?

Contact your local or **Regional OSHA office** (listed in the telephone directory under United States Government-Department of Labor-Occupational Safety and Health Administration). OSHA has included extensive outreach activities as part of this special emphasis program on silicosis. OSHA has designated a crystalline silica coordinator in each Regional OSHA office. The regional coordinator or the OSHA consultation service in your state can be contacted for assistance in obtaining more information.

Oklahoma State University

Environmental Health and Safety

New Jersey State Department of Health
Division of Occupational and Environmental Health
Information Bulletin
June 1989

SILICOSIS AND YOUR HEALTH

WHAT IS SILICOSIS?

Silicosis is an occupational lung disease caused by breathing in silica dust. Over time this disease can destroy a person's breathing capacity.

The causative agent is silica, the most common element found in the earth's crust. It is a major component of beach sand and granite. Silicosis develops only after long term exposures to high levels of silica dust.

WHO IS EXPOSED TO SILICA?

In the United States, occupational exposure to silica occurs in many industries. In particular, individuals in the following industries and occupations are often exposed.

- Mining, quarrying, loading or transporting of silica work or sand
- Construction workers involved in highways, tunnels, cement, plastics, rubber and tile
- Flint workers (breaking, crushing or grinding flint)
- Sand blasting
- Foundry workers
- Workers manufacturing china or earthenware
- Glass industries (unloading, storage and mixing of silica sand)

There are many other industries and occupations in which an individual may be exposed to silica.

HOW DOES THE DISEASE DEVELOP?

Breathing in silica dust causes silicosis by damaging an area of the lungs called the air sac. The presence of silica dust in the air sac of the lungs causes a body defense reaction that results in the formation of scar tissue in the lungs. This scar tissue can limit the ability of the lungs to stretch, thereby limiting the amount of air that can be breathed in.

It is important to know that you do not have to see silica dust to breathe it into your lungs. Because the silica dust particles that are able to reach deep into your lungs and cause damage are so small, it is

impossible to see them.

WHEN DOES THE DISEASE DEVELOP?

Silicosis is normally not apparent until 20 years or more after the first exposure to silica has occurred. After exposure to heavy concentrations of silica dust, the development of silicosis may occur before 20 years. After an exposure to extremely high concentrations, such as in operations in confined spaces, a rare acute reaction can occur in 1-3 years.

The rate at which silicosis progresses is related to the length and level of exposure to silica. The disease may progress even after exposure has stopped. Therefore, it is extremely important to prevent excessive exposure to silica dust.

WHAT ARE THE SIGNS AND SYMPTOMS OF SILICOSIS?

At its earliest stage, silicosis can be seen as scarring on the x-ray without symptoms. As the disease progresses, the symptoms include frequent dry coughing, shortness of breath, wheezing and increased tiredness. These symptoms will become worse in advanced stages until death results from respiratory failure (lungs are no longer able to function), heart failure, pneumonia or other complications.

The diagnosis of silicosis is accomplished by obtaining a complete occupational history, chest x-rays, and lung function testing. it is very important that workers exposed to silica dust have chest x-rays at least every 3-5 years. These x-rays should be evaluated by a qualified medical professional ("B reader") experienced in reading for silicosis to detect the disease in its early stages. Lung function tests should be conducted every year by a qualified technician or physician. These tests will track any changes in the worker's ability to breathe.

WHAT IS THE MEDICAL TREATMENT FOR SILICOSIS?

There is no known medical treatment to reverse silicosis. Antibiotics to reduce the severity of lung infections and check ups for tuberculosis can reduce the complications of silicosis. However, prevention of exposure is the best method of protection.

WHAT ARE THE COMPLICATING FACTORS OF SILICOSIS?

Tuberculosis

Victims of silicosis are known to be susceptible to tuberculosis. The reason for this is debated by scientists but it appears likely that silicosis weakens the defense system of the lungs to bacterial infection.

Lung Cancer

Although the exact cause is not known, individuals with silicosis have an increased chance of getting lung cancer.

Heart Attacks

With severe silicosis, in addition to the direct effects on your lungs, the presence of scar tissue in the lungs also affects the heart. Your heart must work harder to move blood to all the areas of your body. This type of strain on the heart increases the risk of heart failure. Many victims of silicosis will actually die from heart attacks, rather than silicosis.

Connective Tissue Disease

Rare disorders caused by changes in the immune system may be increased in individuals with silicosis. Systemic sclerosis is reported to occur more frequently in individuals with silicosis.

Other Factors/Cigarette Smoking

Cigarette smoking and lung conditions such as asbestosis can cause an additive crippling effect on your lungs when combined with silicosis. Because of this, a worker who has an existing lung disease should never be assigned to an area where there are high silica exposures. Additionally, a worker with silicosis should not be placed in an environment or be exposed to other agents that might cause other damage to the lung.

WHAT CAN BE DONE TO CONTROL SILICA EXPOSURE?

Methods to control silica exposure include:

1.
   - Elimination of the toxic material
   - Substitution of a less toxic material
   - Isolation or enclosure of any dirty operations
   - Installation of local exhaust ventilation
   - Better maintenance, housekeeping and hygiene practices
   - Changes in work practices to avoid breathing in silica dust

2. Respirators should be provided and used by the employee as short term protection when exposure to toxic materials is suspected.

   Respirators, however, should not be used as the only method of control.

WHAT CAN YOU DO ABOUT SILICOSIS?

If you obtain information that indicates a silica problem and your employer does not correct the problem, you can contact two agencies to obtain assistance: the Occupational Safety and Health Administration (OSHA) or the New Jersey Department of Health.

OSHA is responsible for enforcement of federal safety and health regulations, including a regulation requiring employers to keep silica dust levels below permissible exposure limits. To find the OSHA office nearest you, contact:

OSHA Region 11 Office
201 Varick Street
Room 670

New York, NY 10014
212-337-2378

The New Jersey Department of Health provides consultative industrial hygiene services to employees and employers about silica exposure problems. For more information contact:

David Valiante, C.I.H.
Occupational Health Service
New Jersey Department of Health
CN 360
Trenton, NJ 08625
609-984-1863

New Jersey State Department of Health
Division of Occupational and Environmental Health
CN 360, Room 706
Trenton NJ 08625-9972
(609) 984-1863

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New Regulations and Guidelines for Diesel Particulate Matter Require Special Sampling and Analytical Methods

by Robert Lieckfield, CIH
Sr. Vice President, National Director, Laboratory Services
Detroit Regional Office
and
by Alice C. Farrar, CIH
Sr. Vice President, National Director, Occupational Health & Safety
Atlanta Regional Office

Studies during the last decade have linked occupational exposure to diesel particulate matter (DPM) to increased risk of lung cancer. Air pollution studies also suggest that exposure to smaller particles (including those present in diesel exhaust) is associated with increased rates of death and disease. These findings have prompted additional research, as well as new regulations and guidelines for DPM. Actions to date include:

- In 1988, the National Institute for Occupational Safety and Health (NIOSH) recommended that whole diesel exhaust be regarded as a "potential occupational carcinogen," and that reductions in workplace exposure be implemented to reduce cancer risks.
- In 1989, the International Agency for Research on Cancer declared that "diesel engine exhaust is probably carcinogenic to humans."
- In 1995, the American Conference of Governmental Industrial Hygienists (ACGIH) added DPM to its "Notice of Intended Changes" for 1995-96, recommending a threshold limit value (TLV) for a conventional 8-hour workday of 150 micrograms per cubic meter (µg/m3) for the <1 micrometer fraction.
- On July 18, 1997, the United States Environmental Protection Agency (USEPA) published its Final Rule on National Ambient Air Quality Standards for Particulate Matter adding two new $PM_{2.5}$ standards, set at 15 µg/m3, annual mean, and 65 µg/m3, 24-hour average. The $PM_{2.5}$ standards are intended to protect against exposures to fine particulate pollution, a large percentage of which is attributable to diesel fuel combustion sources.
- On September 27, 1997, the USEPA published its Proposed Rule for Control of Emissions of Air Pollution from Nonroad Diesel Engines.

The new regulations and guidelines require special sampling and analytical methods for monitoring occupational exposures to DPM, as well as ambient exposures to $PM_{2.5}$.

MEASURING OCCUPATIONAL EXPOSURES

DPM is comprised of solid elemental carbon particles with adsorbed and condensed hydrocarbons and sulfates. The particles are arranged in chain aggregates and have a mass median diameter of about 0.2 micrometers (µm). Several methods are available for determining occupational DPM exposure levels. A summary follows:

Respirable Particulate. This method takes advantage of the fact that DPM is generally less than 0.8 µm in size, and other dust collected in a respirable dust sample is generally greater than 0.8 µm in size. The sampling device consists of a 10 millimeter (mm) nylon cyclone fitted with a custom-made inertial impactor that separates particles >0.8 µm in size out of the aerosol sample. Particles >0.8 µm are collected on an impaction plate. The submicrometer fraction is collected on the filter. The sample should be collected on a preweighed 5.0 µm pore size vinyl Metricel filter. The mass concentration in µg/m3 is determined gravimetrically. When the

submicrometer mass of the sample collected is less than 0.3 milligram (mg), the DPM should be determined chemically using the organic carbon/elemental carbon (OC/EC) method described below.

Organic Carbon/Elemental Carbon (OC/EC). Samples for OC/EC are collected on specially pre-cleaned (heated at 400°C for 1 hour) 37 mm quartz fiber filters using a 10 mm nylon cyclone. Samples can be collected with or without the custom-made impactor. The collected samples are analyzed through evolved gas analysis using a thermal optical analyzer following NIOSH Method 5040. Organic and elemental carbon are determined through a series of controlled combustion steps and chemical reactions within the OC/EC instrumentation.

In the first stage, organic and carbonate carbon are evolved in an inert helium atmosphere as the reaction temperature is raised to 850°C. The carbon is oxidized to CO_2 using manganese dioxide. The CO_2 is then reduced to methane and quantified by flame ionization detection. In the second stage of analysis, a mixture of oxygen and helium is introduced into the combustion chamber. The oxygen mixture reacts with the pyrolytically generated elemental carbon resulting in an increase in the filter transmittance. Monitoring the filter transmittance allows the differentiation of elemental and organic carbon species. The detection limit for both OC and EC is approximately 0.5 micrograms (µg) per 37 mm filter. The elemental carbon concentration is used as a surrogate to estimate the diesel particulate content.

Respirable Combustible Dust. Respirable combustible dust is determined by the CANMET Method developed by the Minerals and Mining Sciences Laboratory in Ottawa, Ontario, Canada. The CANMET method entails sampling on a preweighed silver membrane filter contained in a two-piece polystyrene cassette using a 10 mm nylon cyclone. Samples can be collected with or without the custom-made impactor. After sampling, the filter is weighed and total particulate is determined. The filter is then heated to 400°C for 2 hours to burn off the combustible particulate matter. The filter is reweighed, and the difference between the pre- and post-heating weights is considered the respirable combustible particulate. The respirable combustible dust (RCD) method should not be used if the sample contains combustible material other than diesel exhaust particulate.

The purpose of the heating step is to volatilize the combustible portion of the collected particulate. There must be a sufficient quantity of collected particulate (>1 mg) in order to reliably determine the measurable quantity (>0.1 mg) of combustible matter. Samples having <1 mg of total particulate can make interpretation of results difficult. The accuracy of the method is highly dependent on analyst technique, because there is an inherent error in quantitative transfers required through the handling of the filter before and after the combustion step.

MEASURING AMBIENT EXPOSURES

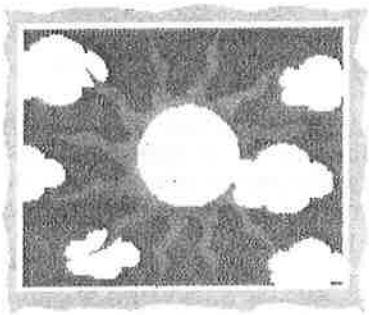
In conjunction with the new USEPA $PM_{2.5}$ standards, a new reference method has been specified for monitoring PM as $PM_{2.5}$. The new reference method, described in 40 CFR part 50, Appendix L, contains a combination of design and performance specifications to define the reference method $PM_{2.5}$ sampler. The performance-based specifications for the reference method sampler allow manufacturers to design and fabricate different samplers that would meet all reference method requirements. Accordingly, multiple $PM_{2.5}$ reference methods are expected to become available from several manufacturers, as is the case for reference methods for PM_{10} and most gaseous criteria pollutants. Each reference method for $PM_{2.5}$, based on a particular sampler, will be formally designated as such by the USEPA under the new provisions added to 40 CFR part 53.

Editor's Note: *Clayton Group Services, Inc. has the special equipment needed for*

sampling and analysis of diesel particulate matter as described in this article.

For more information on diesel particulate matter exposure guidelines and sampling methods, contact Alice Farrar in our Atlanta office at 770.499.7500.

For information on analytical methods, contact Bob Lieckfield in our Detroit office at 248.344.2643.



Cleaner Power Campaign

Taking Our Breath Away

A Summary of the Florida Clean Power Coalition Health Report December 1998

Air pollution kills more than 50,000 people a year in the U.S. -- more than traffic accidents, breast cancer or AIDS. Though our air has gotten cleaner, even with current pollution standards in place, it is not clean enough to avoid making millions of people sick. Electric power production is a major contributor to air pollution and its health impacts.

Breathing high levels of ozone smog, fine particles, acid aerosols, and hazardous air pollutants from power plants puts the health of millions of Florida residents at risk. Still other poisons, like mercury, affect human health through the aquatic food chain. Millions of tons of carbon dioxide emissions contribute to global warming which could have severe health effects.

In 1997, Florida's largest power plants emitted nearly 320,000 tons of ozone smog-causing nitrogen oxides (NOx), almost 700,000 tons of fine particle- and acid rain-forming sulfur dioxide (SO2) and more than 120 million tons of global warming-carbon dioxide (CO2) into our air. Surprisingly, mercury pollution is neither measured nor restricted by state or federal environmental agencies; about one-third of mercury comes from coal-fired power plants.

Ironically, nearly 30 years after passage of the federal Clean Air Act in 1970, we still have health-threatening air pollution problems. A loophole in the Act exempted power plants built before the early 1980's from having to meet the same clean air standards as new plants. In fact, exempt plants pollute at four to ten times the rate of new plants. Many of Florida's coal and oil-fueled power plants take advantage of that loophole, creating excess emissions over new standards. This means Florida has a significant number of dirty older power plants (primarily coal-fueled) that disproportionately pollute and threaten our right to breathe safe air.

The health and environmental consequences of air pollution are not included in what customers pay for electric power from exempt power. As a result, the health costs from power plant pollution are imposed on taxpayers and health care recipients. Every taxpayer bears the cost of Medicaid payments to treat illnesses caused by air pollution. Florida spent more than $326 million from July 1996 to July 1997 to treat 69,000 Medicaid patients with asthma, an illness associated with air pollution. In addition, as health care patients and health insurance customers, everyone pays for air pollution-related health care costs in higher insurance premiums. Healthy People 2000, a report prepared by the Centers for Disease Control and others, estimated the costs of outdoor air pollution in 1994 at $40 - 50 billion (On a per person basis,

120,000 pre-mature deaths per year to air pollution. People with respiratory diseases die, on average, three years earlier than the average life expectancy.

EPA regulates the following four primary power plant air pollutants: Particulate Matter, commonly known as soot, is linked to about 50,000 American deaths each year. Small particles lodge deep in the lungs and can increase breathing problems. Sulfur dioxide, an invisible gas that poses a severe threat to asthmatics, is also the main cause of acid rain.

Ozone, or smog, corrodes lung tissue, leaving children and adults unable to breathe normally.

Nitrogen oxides are gases formed by smokestacks and other sources that lead to formation of particulate matter and ozone and may themselves be linked to lung disease.

Power plant air pollutants classed as hazardous substances include mercury, a poison that affects the brain and nervous system. Mercury emitted to the air falls into lakes and rivers where it is taken up by fish. People who eat substantial amounts of contaminated fish are at risk. Many Florida lakes and rivers are contaminated with unsafe levels of mercury. Other hazardous substances from power plants include: arsenic, beryllium, cadmium, chromium and nickel.

Global warming, caused in part by carbon dioxide emited from power plants, can also cause health impacts from increased heat, tropical disease and extreme weather events.

Alternatives to our fossil fuel addiction are possible. Energy efficient appliances and solar energy technologies could increase health benefits to Florida while also providing jobs and other economic benefits.

Recommendations

1. Clean up old, dirty power plants. By the year 2000, all plants must meet modern emission standards for nitrogen oxides and sulfur dioxide currently met by newer power plants (1.5 lbs per megawatt hour for NOx and 3.0 lbs per megawatt hour for SO2).
2. Set strict limits on emissions of mercury for all power plants. Currently, there are no limits on power plant emissions of mercury. Power plants should be required to reduce mercury emissions significantly.
3. Set strict limits on emissions of carbon dioxide for all power plants. Currently, there are currently no limits on power plant emissions of CO2. Standards are needed to require power plants to reduce CO2 emissions to a level consistent with a cautious approach to global warming.
4. Ensure that any electric industry restructuring encourages "green power." Any move towards retail competition at the federal level must include mechanisms to ensure deployment of clean, renewable resources and energy efficiency technologies.

LINK TO TAKING OUR BREATH AWAY REPORT (8C) AND FACT SHEET (8H)

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chemicals and pollution that can cause many kinds of illnesses.


T. Charles Erickso

The mere act of publicizing the extent of a company's toxic emissions can spur dramatic reductions. With the support of EDF and other environmental groups, the Environmental Protection Agency expanded its Community Right to Know program this year, requiring seven additional industries to report their releases of more than 600 toxic chemicals. These industries include coal and metal mining, electric utilities, and bulk petroleum terminals.

The Pollution Prevention Alliance, EDF's "office without walls" in the Great Lakes region, is working with grassroots groups in Cleveland to help them access, understand, and use information about the chemicals that are released in their communities. The goal is to give workers and neighbors a strong voice in companies' environmental decisions, making pollution prevention a standard business practice. EDF plans to make similar health information available to communities nationwide using the World Wide Web.

"EDF's chemical safety initiative has already focused significantly more attention on these issues ... and will improve the availability of information to the public."

–Donald W. Griffin, Chairman, President, and CEO, Olin Corporation

Millions of Americans still breathe unhealthful air, but this year an important victory was won when the Environmental Protection Agency adopted stricter clean air standards and directed 22 Eastern, Midwestern, and Southern states to curb the nitrogen emissions that contribute to urban smog. Because much of this pollution travels long distances and crosses state lines, the agency embraced EDF's plan for a broad regional approach. The plan has a rigid limit on harmful emissions but allows flexibility in how and where cuts will be made, thereby producing guaranteed reductions while ensuring the lowest cost.

EDF helped establish a similar regional approach to air quality problems in the Paso del Norte region around El Paso, Texas, and neighboring Ciudad Juarez, Chihuahua. Because the two cities share a common airshed, El Paso businesses are now allowed to meet some of their Clean Air Act obligations by investing in measures to reduce pollution in Juarez, where many more cost-effective opportunities are available.

Worldwide, most environmentally caused diseases come from contaminated water. In developing countries, EDF is striving to increase public and private investment in drinking water, sanitation, and sewage treatment. This year a low-cost wastewater treatment plant in Tijuana, Mexico, designed and built by EDF and El Colegio de Frontera Norte,

was certified by the Border Environmental Cooperation Commission. The plant reduces the amount of untreated sewage flowing into the Tijuana River and a neighboring wildlife reserve.

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Annual Report
1997

Health: Protecting People from Toxic Chemicals and Pollution

Archive Photos

The Ethyl Corporation introduced tetraethyl lead as a gasoline additive in 1923, without adequate health testing. Over the next 70 years, more than five million tons of lead went into gas. Most was dispersed from tailpipes into the air, contaminating the environment and endangering public health. EDF helped spearhead the fight against this health hazard, and lead was eliminated from gas in 1995. In 1997, another Ethyl metal-based additive, MMT, was banned in Canada and largely shunned in the United States, after EDF demanded that it not be used before health tests show it to be safe.

Toxic chemicals and pollution can weaken people's resistance to disease and also directly cause illness, including cancer, damage to the nervous system, and lead poisoning. But it is not always clear which substances pose a threat. Each year manufacturers sell billions of pounds of chemicals for which the public lacks basic data on health effects. In essence, we and our children and grandchildren are the subjects of a large-scale health experiment.

A new EDF study, *Toxic Ignorance*, shows that even basic health tests are not publicly available for two-thirds of the 3,000 top-selling industrial chemicals. EDF has called on the 100 largest U.S. chemical companies to test the products they make and sell and to disclose the results.

Children deserve to grow up in a safe and healthful environment, free from exposure to toxic

What's new

Who we are

What we do

What EPA is doing

What others are doing

Where you can get info

What you can do

Children's Environment
Air they breathe
Water they drink
Food they eat
Where they live, learn and play

Children's Health
Asthma and upper respiratory illnesses
Developmental and neurological toxicity
Childhood cancer

EPA United States Environmental Protection Agency

Office of Children's Health Protection - OCHP -

Air they breathe

INDOOR AIR	OUTDOOR AIR	Other OCHP pages with air information
Introduction Environmental Tobacco Smoke Allergens Volatile Organic Compounds Formaldehyde Nitrogen Oxides Carbon Monoxide Radon Lead Pesticides	Introduction Protecting your children Ozone Particulate matter Carbon monoxide Lead Nitrogen dioxide Sulfur dioxide Air pollution and your backyard More sites	Where you can get info - Air information What you can do - Air information

INDOOR AIR

Most people are aware that outdoor air pollution can damage their health but may not know that indoor air pollution can also have significant effects. EPA studies of human exposure to air pollutants indicate that indoor air levels of many pollutants may be 2-5 times, and occasionally more than 100 times, higher than outdoor levels. These levels of indoor air pollutants are of particular concern because it is estimated that most people, including children, spend as much as 90% of their time indoors.

Over the past several decades, our exposure to indoor air pollutants is believed to have increased due to a variety of factors, including the construction of more tightly sealed buildings, reduced ventilation rates to save energy, the use of synthetic building material and furnishings, and the use of chemically formulated personal care products, pesticides, and household cleaners.

In recent years, comparative risk studies performed by EPA and its Science Advisory Board (SAB) have consistently ranked indoor air pollution among the top five environmental risks to public health. EPA, in close cooperation with other Federal agencies and the private sector, is actively involved in a concerted effort to better understand indoor air pollution and to reduce people's exposure to air pollutants in homes, schools, and other environments where children live, learn, and play. EXIT EPA

Environmental Tobacco Smoke (Secondhand Smoke)

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The Centers for Disease Control and Prevention's (CDC) National Center for Environmental Health reports that 43 percent of children, two months through 11 years of age, live in a home with at least one smoker. Children who live with smokers involuntarily inhale many pollutants in smoke. Environmental tobacco smoke (ETS), als known as secondhand smoke, is a complex mixture of more than 4,000 chemicals, including carbon monoxide , nicotine, tars, formaldehyde and hydrogen cyanide. Severa of these chemicals are known human carcinogens or respiratory irritants.

Children exposed to ETS tend to have more bronchitis, pneumonia, respiratory infections, otitis media (fluid in the middle ear), and asthma symptoms. The frequency o infection depends directly on the amount of smoke in the home. Children who live with two smoking parents have more respiratory infections than children who live with one smoking parent. The lowest rates of respiratory infections and asthma are found in children of parents who do not smoke at all. Maternal smoking during pregnancy is associated with an increased incidence of Sudden Infant Death Syndrome.

EPA estimates that between 150,000 and 300,000 cases of lung infections, such as bronchitis and pneumonia, that occur annually in infants and young children up to 18 months of age may be attributed to exposure to ETS. Of these, 7,500 to 15,000 will result in hospitalization. ETS exposure aggravates the condition of between 200,000 an 1,000,000 asthmatic children. EPA has found that ETS increases fluid in the middle ear, a sign of chronic middle ear disease, the most common cause of hospitalization for surgery in children.

The CDC estimates that children exposed to tobacco smoke in their homes have 18 million more days of restricted activity, 10 million more days of bed confinement, and miss 7 million more school days annually than other children, primarily due to acute and chronic respiratory conditions.

Allergens

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Allergens, especially those containing biological matter, such as house dust mites, cockroaches, pet dander, pollen, molds, spores, bacteria, and viruses, are known to cause or aggravate asthma. Allergic reactions often combine with and seriously aggravate the symptoms of asthma, the common cold, pneumonia, and other conditions. Allergens also may cause eye, nose and throat irritation, shortness of breath, dizziness, lethargy, and fever.

Volatile Organic Compounds

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Volatile organic compounds (VOCs) are chemicals that can volatilize (evaporate) from substances, such as cleaning products, adhesives, paints, dry-cleaning fluids, and wood preservatives. VOCs can be emitted from these products into the air and may be trappec indoors, especially in tightly sealed buildings. An EPA study of six communities in various parts of the United States found that indoor levels of VOCs are up to ten times

higher than outdoor levels. Symptoms of VOC exposure may include eye, nose and lung irritation, rash, headache, nausea, vomiting, and asthma. Exposure to some VOCs, such as benzene and vinyl chloride, may cause cancer.

Formaldehyde

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Formaldehyde is a common VOC, is a colorless, strong-smelling gas used in pressed wood (particle board, fiberboard, and plywood), paints, coatings, cosmetics, fabrics, and insulation materials. Formaldehyde is released into the air from these products as well as from burning wood, kerosene, or natural gas, and from automobiles and cigarettes. Formaldehyde causes cancer in laboratory animals and is considered by EPA to be a probable human carcinogen. Although formaldehyde affects people differently, it may irritate the eyes, nasal sinuses, throat, and lungs, and may trigger asthma. Children and adults have developed allergic reactions, including hives, from exposure to the gas.

Nitrogen Oxides

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Nitrogen Oxides are more often thought of as outdoor air pollutants emitted by motor vehicles and fossil-fuel burning power plants, but they also are found indoors. Inadequately vented gas ranges, gas pilot lights, gas or kerosene heaters, and welding activities, as well as tobacco smoke, contribute to nitrogen oxides in indoor air. Because they are potent respiratory irritants, they may aggravate asthma and other respiratory disease.

Carbon Monoxide

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Carbon monoxide is a colorless, odorless gas produced from the incomplete burning of virtually any combustible product. It may accumulate indoors as a result of tobacco smoking, poorly ventilated appliances, and attached garages. Carbon monoxide enters the blood from the lungs and combines with hemoglobin, blocking the blood's ability to carry oxygen to body cells. Symptoms of carbon monoxide exposure may mimic influenza and include fatigue, headache, dizziness, nausea and vomiting, mental confusion, and rapid heart rate. Depending on the level of exposure, carbon monoxide can be immediately fatal. Long-term, low-level exposure to carbon monoxide by pregnant women have the potential to injure the developing fetus.

Radon

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Radon, a known human carcinogen, is a naturally occurring, radioactive gas that is colorless, odorless, and tasteless. It comes from the natural decay of uranium, a radioactive metal found in soil and rock in the earth's crust all over the United States. Radon travels through soil and enters the indoor environments of buildings through cracks and other openings in the foundation. Eventually, radon decays into radioactive particles that can be inhaled and then trapped in the lungs. As these particles decay, they release small bursts of radiation that can damage lung tissue and lead to lung cancer late in life.

EPA estimates that radon may cause from 7,000 to 30,000 lung cancer deaths in the

United States each year. Radon is the second leading cause of lung cancer deaths in adults, after smoking. An individual's risk of getting lung cancer from radon depends mainly on three factors: the level of radon, duration of exposure, and smoking habits. Risk increases in individuals exposed to high levels of radon over a long time. The risk of dying from lung cancer caused by radon is much greater for smokers than for non-smokers.

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Lead

Exposure to lead-contaminated dust, is the most common way to get lead poisoning. Lead is highly toxic and exposure to it can be dangerous, especially for children who are 6 or younger. The most common household lead hazards are lead-based paint, lead dust and contaminated soil. Other sources of lead hazards are older plumbing fixtures, vinyl miniblinds, painted toys and household furniture made before 1978 that may be painted with lead-based paint, lead smelters or other industries can release lead into the air and lead-glazed ceramic ware, pottery, and leaded crystal can contaminate food and liquids stored in them.

Lead is poisonous because it interferes with some of the body's basic functions. Exposure to low levels of lead can permanently affect children. In low levels, lead can cause nervous system and kidney damage. Learning disabilities, attention deficit disorder, and decreased intelligence. High levels of lead can have devastating effects on children, including seizures, unconsciousness, and, in some cases, death.

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Pesticides

According to a recent survey, 75 percent of U.S. households used at least one pesticide product indoors during the past year. Products used most often are insecticides and disinfectants. Another study suggests that 80 percent of most people's exposure to pesticides occurs indoors and that measurable levels of up to a dozen pesticides have been found in the air inside homes. The amount of pesticides found in homes appears to be greater than can be explained by recent pesticide use in those households; other possible sources include contaminated soil or dust that floats or is tracked in from outside, stored pesticide containers, and household surfaces that collect and then release the pesticides. Pesticides used in and around the home include products to control insects (insecticides), termites (termiticides), rodents (rodenticides), fungi (fungicides), and microbes (disinfectants). They are sold as sprays, liquids, sticks, powders, crystals, balls, and foggers. In 1990, the American Association of Poison Control Centers reported that some 79,000 children were involved in common household pesticide poisonings or exposures. In households with children under five years old, almost one-half stored at least one pesticide product within reach of children. Exposure to high levels of cyclodiene pesticides, commonly associated with misapplication, has produced various symptoms, including headaches, dizziness, muscle twitching, weakness, tingling sensations, and nausea. In addition, EPA is concerned that cyclodienes might cause long term damage to the liver and the central nervous system, as well as an increased risk of cancer.

OUTDOOR AIR

Outdoor air pollution can be harmful to anyone, but is particularly unhealthy for children.

- Children breathe more rapidly and inhale more pollutants per pound of body weight than adults.
- Their airways are more narrow than those of adults and their respiratory systems are still developing.
- They play more often and more vigorously outdoors, leading to greater exposure.
- They tend to focus less on symptoms, and they may not stop playing even if they are wheezing.

Levels of outdoor air pollutants are much lower today than in the past. In some areas of the country, however, outdoor air is getting worse, not better. There are adverse health effects associated with exposure to each of the six major outdoor air pollutants:

live in areas that do not meet all national air quality standards.

US industries pump at least 2.4 billion pounds of chemicals into the air every year.

How to protect your children from outdoor air pollutio to

Levels of outdoor pollutants vary from day to day, and even during the course of a single day. It is difficult to completely prevent exposure, but it may be possible to reduce exposure when pollutant levels are high.

Following the guidelines associated with the Air Quality Index (or, formerly the Pollutant Standards Index) will let you know when you should reschedule or limit the amount of time your children play outdoors, thereby limiting your child's exposure to pollution.

The air quality index is a way to let you know about local levels of outdoor pollutants in metropolitan areas on a daily basis. It may be reported in your local paper, TV, or radio. If the index is not easily available through these media, call your local and state air pollution control agency, EXIT EPA as they are responsible for collecting data and reporting.

The Air Quality Index groups pollutant levels into 6 categories:

- good,
- moderate,
- unhealthy for sensitive groups,
- unhealthy,
- very unhealthy, and
- hazardous.

For each of these groupings and for each

Facts About Ozone

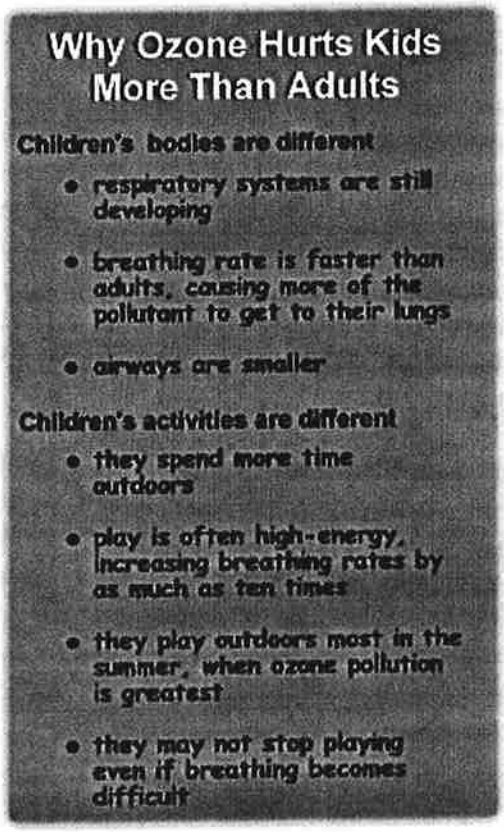
- Ozone is the outdoor pollutant consistently associated with aggravating asthma.
- More people are exposed to unhealthy levels of ozone than any other pollutant.
- Exposure to ozone for several hours at relatively low

pollutant, cautionary statements concerning certain segments of the population, (children, those with respiratory disease, elderly, etc) are provided, indicating whether to limit time or activity outdoors.

For example, If ozone is in the air quality index category "unhealthy for sensitive groups" the cautionary statement is: "Active children and adults, and people with respiratory disease, such as asthma, should limit heavy outdoor exertion."

concentrations has been found to significantly reduce lung function and induce respiratory inflammation in normal, healthy people during exercise.

- Exercise increases likelihood of breathing through the mouth, rather than the nose, which can filter half of the ozone. Pollution that would normally be filtered goes straight to the lungs.



Ozone

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What is ozone and where does it come from? There are two types of ozone. One is good ozone in the stratosphere, and the other is bad -- ozone at ground-level.

Ozone is not emitted directly into the air we breathe. Instead, it is formed by the chemical reaction of pollutants from cars, trucks, and buses, chemical plants, refineries, power plants, other combustion activities and factories. Heat and sunlight also work to make ozone production possible, and that is why ozone is more often a health concern in the summer.

Ozone can move hundreds of miles downwind affecting large areas. Ozone is the principle ingredient of smog, which causes choking, coughing and stinging eyes.

What are the health effects of ozone? Children are especially vulnerable to the effects of ozone. Except for the very young, children typically spend more time outdoors than do adults, especially in the summer when ozone levels are the highest. Children also spend more time in vigorous activity, which results in more outside air being taken into their lungs. Their activity, combined with the higher breathing rate of children relative to their body weight and lung surface area, results in a greater dose of pollutant delivered to their lungs. Air pollution that would produce only slight breathing difficulties in an adult may contribute to a more serious breathing problem in a young child.

Particulate Matter

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What is particulate matter and where does it come from? Particulate matter include dust, dirt, soot, smoke and liquid droplets directly emitted into the air by sources such a

factories, power plants, cars, construction activity, fires and natural windblown dust. It i found in a range of sizes.

What are the health effects of particulate matter? Children are especially sensitive tc particulate matter, which may cause respiratory disease and aggravate asthma. Particulate matter is inhaled, the particles accumulate in the respiratory system. Exposure to coarse particles is primarily associated with the aggravation of respiratory conditions, such as asthma. Fine particles are most closely associated with such health effects as increased hospital admissions and emergency room visits for heart and lung disease, increased respiratory symptoms and disease, decreased lung function, and even premature death.

Carbon Monoxide

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What is carbon monoxide and where does it come from? Carbon monoxide (CO) is formed when carbon in fuels is not completely burned. It is a colorless, odorless gas, an at high levels it can be poisonous. Motor vehicle exhaust contributes 60% of all CO emissions nationwide, which is why urban areas with lots of traffic congestion generally have higher levels of CO concentrations. In cities, as much as 95% of the CO in the air may come from automobile exhaust. There are other sources of carbon monoxide, namely: industrial processes, fuel combustion not related to transportation, wildfires, wood stoves, cooking, cigarette smoke, and space heaters. Higher CO concentrations are more typical in colder months of the year.

What are the health effects of carbon monoxide? CO enters the bloodstream via the lungs and reduces oxygen delivery to organs and tissues. Visual impairment, reduced manual dexterity, poor learning ability, reduced work capacity, and difficulty in performing complex tasks are associated with exposure to high CO levels. The health threat is most serious for those who suffer from cardiovascular disease. At very high levels CO is poisonous and can affect healthy people. CO indoors, in your home and schools, is a serious health problem. There are ways to prevent CO levels from building indoors.

Lead

Back to to

What is lead and where does it come from? Lead is found in our air, soil, and water and it can be inhaled or ingested. Both indoors and outdoors, lead is a health concern, particularly for children. By taking lead out of gasoline, lead concentrations have dramatically declined making outdoor lead pollution much less a problem today than in the past. But there are a few places in the country where ambient lead is still a concern, due to metals processing, smelters, and battery manufacturing.

What are the health effects of lead? Even at very low doses lead is bad for children, a it is associated with IQ deficiencies, reading and learning disabilities, impaired hearing, reduced attention spans, hyperactivity, and antisocial behavior. It stays in our bodies, in blood, bones, and soft tissues, and can hurt kidneys, liver and the nervous system. Excessive exposure can cause seizures, mental retardation, and behavioral problems.

Nitrogen Dioxide

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What is nitrogen dioxide and where does it come from? Nitrogen dioxide is a reddis brown, highly reactive gas formed in the atmosphere through the oxidation of nitrogen oxides. It plays a role in forming ozone and acid rain. Nitrogen oxides (NO_x) include various nitrogen compounds like nitrogen dioxide (NO_2) and nitric oxide (NO). These compounds play an important role in the atmospheric reactions that create ozone (O_3) and acid rain. Outdoor sources of nitrogen dioxide include automobiles and power plants. Indoors, home heaters and gas stoves produce nitrogen dioxide.

What are the health effects of nitrogen dioxide? Short-term exposures, less than 3 hours, may produce changes in airway responsiveness and pulmonary function, and increases in respiratory illness in children. Long-term exposure may lead to increased susceptibility to respiratory infection and may cause alteration in the lungs.

Sulfur Dioxide

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What is sulfur dioxide and where does it come from? When coal or oil fuel containing sulfur is burned, a gas called sulfur dioxide is formed. It also comes from metal smelting and other industrial processes. It plays a role in forming particulate matte and acid rain.

What are the health effects of sulfur dioxide? In children with asthma, high levels of this gas can cause temporary breathing problems if they are playing outdoors. If exposure is short-lived, it may result in reduced lung function and symptoms of wheezing, chest tightness, or shortness of breath. Long-term exposure may bring respiratory illness and aggravation of existing cardiovascular disease.

Air pollution and your backyard

Back to to

You may be interested in learning more about pollution where you live. To find out wha pollutants are common in your area, and to discover what is causing the pollution, go to The Environmental Defense Fund site at www.scorecard.org EXIT EPA. For EPA data or air pollution, go to the AIRS Data. Interactive calculators are designed to tell you how much your car pollutes or how your electricity is produced and the resulting pollution created. EXIT EPA

More Sites:

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General information on air quality

EPA, Office of Air and Radiation, Office of Air Quality Planning and Standards
www.epa.gov/oar/oaqps
EPA, Office of Air and Radiation, Office of Mobile Sources
www.epa.gov/docs/OMSWWW/omshome.htm

Information on places, called "nonattainment areas," that do not meet EPA's air pollutio standards

EPA, Office of Air and Radiation, Office of Air Quality Planning and Standards
www.epa.gov/airs/nonattn.html
www.epa.gov/oar/oaqps/greenbk/

About monitoring, emissions, concentrations, and air quality trends

EPA, Office of Air and Radiation, Office of Air Quality Planning and Standards
www.epa.gov/oar/oaqps/cleanair.html

Emissions information

EPA, Office of Air and Radiation, Office of Air Quality Planning and Standards
www.epa.gov/oar/oaqps/emissns.html

Air Quality Index

Basic information on the index (formerly known as the Pollution Standard Index)
www.epa.gov/airnow/factsht.html
To see the complete cautionary statement for each pollutant and each air quality index category,
www.epa.gov/airprogm/oar/oaqps/airnow/rg701tab.pdf
The Weather Channel
www.weather.com/health/airquality EXIT EPA
American Lung Association
www.lungusa.org/air/ EXIT EPA
For a directory of state and local air pollution control agencies
www.4cleanair.org/memberst.html EXIT EPA

Ozone

Introduction to both types of ozone
www.epa.gov/oar/oaqps/gooduphigh/
Animated pictures of ozone pollution superimposed over a map of the United States show how pollution levels change through the day and how ozone moves over large geographic areas.
www.epa.gov/airprogm/oar/oaqps/airnow/ozone.html

Smog information

www.epa.gov/airprogm/oar/oaqps/regusmog/infozone.html

EPA handbook for setting up an ozone action program in your community

www.epa.gov/airprogm/oar/oaqps/airnow/cdmanual.pdf

What you can do to reduce car emissions

www.epa.gov/oms/18-youdo.htm
www.epa.gov/oms/consumer.htm#youdo

Lead

EPA, Office of Air and Radiation, Office of Air Quality Planning and Standards
www.epa.gov/oar/aqtrnd97/brochure/pb.html
Alliance to End Childhood Lead Poisoning
www.aeclp.org EXIT EPA
Centers for Disease Control and the National Center for Environmental Health: "What Every Parent Should Know About Lead Poisoning in Children"
www.cdc.gov/nceh/programs/lead/faq/cdc97a.htm EXIT EPA
"Screening Young Children for Lead Poisoning: Guidance for State and Local Public Health Officials"
www.cdc.gov/nceh/programs/lead/guide/1997/guide97.htm EXIT EPA

Nitrogen dioxide and sulfur dioxide

EPA, Office of Air and Radiation
www.epa.gov/acidrain/ardhome.html
www.epa.gov/oar/aqtrnd97/brochure/no2.html
www.epa.gov/oar/aqtrnd97/brochure/so2.html

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http://www.epa.gov/children/air.htm
This page was last updated on: 1/19/00

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Zip Codes with Reported Releases of TRI Chemicals to the Environment

Ranked by (select your ranking criteria)

Total environmental releases

in

FLORIDA Go (explain)

Rank	Zip Code	Pounds
1.	33619	209,287,776
2.	32177	83,122,536
3.	33830	68,549,056
4.	32218	60,157,072
5.	32514	54,643,030
6.	32560	27,136,197
7.	33440	22,261,771
8.	32533	17,445,138
9.	32254	12,905,046
10.	32347	12,641,406
11.	34429	8,793,299
12.	34243	8,400,000
13.	32653	8,360,540
14.	32034	8,273,142
15.	32780	8,058,820
16.	32809	7,039,290
17.	32096	6,763,780
18.	32206	5,899,590
19.	33860	5,878,961
20.	32571	5,794,695
21.	33167	4,990,468
22.	33316	4,622,022
23.	32831	3,830,360
24.	33565	3,694,376
25.	32409	3,594,294
26.	33572	3,386,151
27.	32750	2,955,156
28.	33054	2,723,714
29.	32060	2,613,363

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POLLUTION RANKINGS | By Counties in FLORIDA

Environmental Defense Scorecard

Facilities Releasing TRI Chemicals to the Environment

Ranked by (select your ranking criteria)

Total environmental releases

in

ALACHUA

from

All reporting sectors Go (explain)

Rank	Facility	Pounds
1.	GAINESVILLE REGIONAL UTILITIES DEERHAVEN GENERATING STATION, 10001 N.W. 13TH ST., GAINESVILLE	2,077,379
2.	ARCHMICA (FL) INC., 5002 N.E. 53RD RD., AIRPORT INDL. PARK, GAINESVILLE	373,059
3.	HUNTER MARINE CORP., U.S. HWY. 441, ALACHUA	57,734
4.	SEABRING MARINE IND. INC., 212 MAGNOLIA ST., ARCHER	21,510
5.	PERMA-FIX OF FLORIDA INC., 1940 N.W. 67TH PL., GAINESVILLE	12,756
6.	EVEREADY BATTERY CO. INC. ENERGIZER POWER SYS., U.S. HWY. 441 N., ALACHUA	1,750
7.	KOPPERS IND. INC., 200 N.W. 23RD BLVD., GAINESVILLE	164

Email questions regarding the data or how to use this information to protect the environment.

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POLLUTION LOCATOR | Definitions of Air Pollution Source Categories

Environmental Defense Scorecard

Sources of air pollution like factories or cars are usually categorized by regulatory agencies into one of three groups: area, mobile, or point. Categorization of a specific source may vary depending on whether it is releasing "criteria" or "hazardous" air pollutants. Criteria pollutants refer to six chemicals which occur frequently in ambient air and can injure human health, harm the environment or cause property damage: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. Hazardous air pollutants (HAPs) refer to other chemicals which can cause adverse effects to human health or the environment. Congress has identifed over 188 of these pollutants, including substances that cause cancer, neurological, respiratory, and reproductive effects.

AREA SOURCES

Area sources include small pollution sources like dry cleaners, gas stations, and auto body paint shops. Area sources are defined as sources that emit less than 10 tons per year of a criteria or hazardous air pollutant or less than 25 tons per year of a combination of pollutants. The category also includes commercial buildings (heating and cooling units; surface coatings), residential buildings (fire places; surface coatings), fuel combustion in non-road machinery, boats, railroads, and even the family lawnmower or barbecue grill. Waste disposal in the form of open burning, landfills and wastewater treatment are significant area sources.

Though emissions from individual area sources are relatively small, collectively their emissions can be of concern - particularly where large numbers of sources are located in heavily populated areas. Area sources are responsible for over 50% of particulate matter emissions and more than point or mobile sources for volatile organic compound (VOC) emissions, which contribute significantly to the formation of ground-level ozone.

More on area sources.

MOBILE SOURCES

Mobile sources include both onroad vehicles (such as cars, trucks and buses) and offroad equipment (such as ships, airplanes, agricultural and construction equipment).

Mobile sources contribute significantly to air pollution. Driving a car is probably a person's single most polluting daily activity. Nationwide, mobile sources are responsible for about 75% of carbon monoxide pollution, and more oxides of nitrogen emissions than area or point sources. In urban areas, the motor vehicle contribution to carbon monoxide pollution can exceed 90 percent. In a typical urban area, at least half of the hydrocarbon and nitrogen oxide pollutants come from mobile sources. Motor vehicles are also substantial sources of

hazardous air pollutants, such as the recognized carcinogens benzene, formaldehyde, acetaldehyde, 1,3-butadiene and diesel particulate matter.

More on mobile sources.

POINT SOURCES

Point sources include major industrial facilities like chemical plants, steel mills, oil refineries, power plants, and hazardous waste incinerators. Point sources are defined as those that emit 10 tons per year of any of the criteria pollutants or hazardous air pollutants or 25 tons per year of a mixture of air toxics.

Nationwide, point sources like power plants, petroleum refineries, fertilizer manufacturers, industrial paper mills, copper smelters and iron and steel mills contribute the majority of sulfur dioxide emissions, accounting for nearly 90% of this criteria air pollutant. Point sources are less important sources of VOCs - adding less than 15% of the volatile organic compounds to the air. Electrical utilities and industrial boilers are the largest sources of nitrogen oxide (NOx) emissions.

More on point sources.

Stationary Air Emissions Sources in Alachua County

There are over 50 permitted stationary air emission sources in Alachua County. The vast majority of these sources are relatively small sources, such as dry cleaners and crematoriums.

Approximately 30 percent of the permitted sources can be classified as either significant or major. These sources have the potential to emit over 10 tons per year of volatile organic compounds (VOC) or 25 tons per year of nitrogen oxides (NO_x). The Florida Department of Environmental Protection requires these sources to submit annual operating reports. The annual operating reports contain the permitted facilities annual emissions, which are obtained from continuous monitoring data or calculated from an engineering estimate based on operating activity.

Other LInks ...

- Major Source Summary
- Major Industrial Sources in North Central Florida (PDF File)
- Map of Major Industrial Sources in North Central Florida
- Alachua County Permitted Air Emission Sources (PDF File)

Check out the Air Emission Inventory page to find out how industrial air emissions compare to emissions from other sources. Also, to learn more about the permitting process, visit the Why and How page.

Interactive Industrial Source Map

Move your cursor over one of the color-coded major industrial source locations on the map to learn more about that source.

Legend

- **Florida Rock Industries, Inc.**
- **Hunter Marine Corporation**
- **Gainesville Regional Utilities, Deerhaven**
- **Metal Container Corporation**
- **Gainesville Regional Utilities, J.R. Kelly**
- **Florida Power Corporation**

Major sources are defined as permitted sources emitting over 100 tons per year (TPY) of any criteria pollutant. Significant sources are defined as permitted sources emitting over 10 TPY of VOC and 25 TPY of NO_x.

1997 Permitted Air Emission Sources Required to Submit Annual Operating Reports and 1997 Reported Emissions, Alachua County (all emissions in tons)

Facility Name	General Description	NOx	SO2	CO	VOC	PM10
GRU Deerhaven	Electric Power Generation	4,104	7,026	214	17.7	123
GRU Kelly	Electric Power Generation	257	12.8	17.7	0.6	1.9
Florida Power Corp.	Electric Power Generation	116	0.03	34.9	36.6	29.5
VA Medical Center	Medical Incinerator	2.2	0.3	0.1	0	0.2
Bear Archery	Sport Equipment Manufacturing	1.8	0	0	22.5	9.5
Vet School UF	Medical Incinerator	0.5	0.2	0	0.3	0.2
VE Whitehurst	Asphalt Plant	-	-	12.8	-	4.9

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Vet School UF	Medical Incinerator	0.5	0.2	0	0.3	0.1
VE Whitehurst	Asphalt Plant	-		12.8		4.1

White Construction	Asphalt Plant	-	16.6	-	5.2	0.7
Hipp Construction	Asphalt Plant	-	0.1	-	-	0.3
Driltech	Drilling Equipment Manufacturing	-	-	-	19.8	0.2
Metal Container Corp.	Metal Cans	-	-	-	186	-
PCR Corp.	Chemical Manufacturing	-	-	-	49.7	-
Hunter Marine Corp.	Boat Building	-	-	-	99.09	-
Seabring Marine	Boat Building	-	-	-	9.24	-
Total in Tons		**4,479**	**7,060**	**279.5**	**519.6**	**170.4**

Air Quality Initiative Home | Alachua County Home | Alachua County Environmental Protection Dept.

201 SE 2nd Ave, Suite 201, Gainesville, FL 32601 (352)264-6800
Staff Contact: Tony Malone, amalone@co.alachua.fl.us.

Granite Company	Aspirant Plant	–	10.0	–	0.2	0.7
Ridge Construction	Aspirant Plant	–	0.1	–	–	0.2
Quillock	Drilling Equipment Manufacturing	–	–	–	18.0	0.2
Mallet Granite Corp	Mallet Quarry	–	–	–	1.8	–
Ridge Corp	Chemical Manufacturing	–	–	–	45.7	–
Prairie Marble Corp	Stone Polishing	–	–	–	0.1	–
Granite Ridge Inc	Power Blasting	–	–	–	1.24	–
Limestone Corp		4,170	7,000	2,170	3,170	170.4