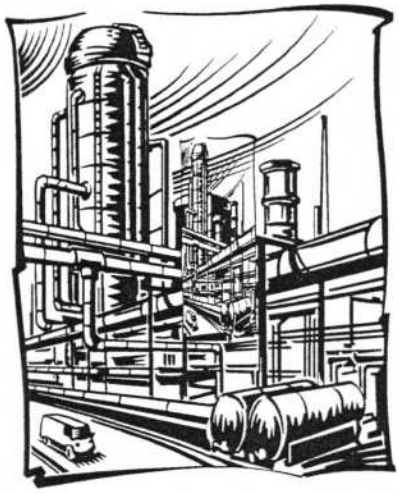
SOIL BURNERS FACT PACK

CENTER FOR HEALTH, ENVIRONMENT & JUSTICE
P.O. BOX 6806
FALLS CHURCH, VIRGINIA 22040-6806
(703) 237-2249

SOIL BURNERS
FACT PACK



JANUARY 1998
$7.00 PLUS POSTAGE

ADDITIONAL COPIES OF THIS FACT PACK ARE AVAILABLE FROM:
CENTER FOR HEALTH, ENVIRONMENT & JUSTICE
P.O. BOX 6806
FALLS CHURCH, VIRGINIA 22040-6806
(703) 237-2249

CHEJ CONTINUALLY UPDATES OUR FACT PACKS WITH INFORMATION WE RECEIVE FROM THE GRASSROOTS. IF YOU HAVE ANY INTERESTING ARTICLES TO ADD TO THIS FACT PACK, PLEASE SEND COPIES TO OUR SCIENCE DEPARTMENT AT THE ADDRESS ABOVE. THIS FACT PACK REPRESENTS THE MOST INTERESTING, CURRENT ARTICLES AND MATERIALS DEALING WITH THIS ISSUE.

Incineration of Contaminated Soils... A Wolf In Sheep's Clothing

By Stephen Lester, CCHW Science Director

Have you been confronted with a proposal in your community that will use a "regenerative thermal oxidizer?" or a "rotary drum drier?" or how about a "low temperature thermal extraction system?" Has the local cement kiln or asphalt plant suddenly decided they want to "treat" contaminated soil in their boilers?

Dozens if not hundreds of communities across the country are faceing a rash of new proposals to burn contaminated soil using a wide variety of "thermal" methods that have one common thread - nowhere does anyone mention the word incineration. Most of these communities are faced with proposals to burn soil contaminated by leaking underground storage tanks (LUST) that contain petroleum hydrocarbons and gasoline additives. In other situations, EPA or the state has decided that contaminated soil from the local contaminated site can only be dealt with by incineration.

It seems the word is out - burning and incinerating contaminated soil is the way to go. EPA supports it and the push is on. But because communities understand the dangers of incineration, don't call your technology or treatment system incineration. Call it anything, call it a regenerative thermal oxidizer, a rotary drum drying or low temperature thermal extraction - just don't call it "INCINERATION!"

Incineration has become the big taboo word and no government or private company will use it no matter how obvious it is that the proposal calls for incineration. This is a ploy by government and industry to confuse and fool the public. Their intent is to make you think that the issues of incineration don't apply to their proposal. "This is a new and different process that does not incinerate the waste."

Is this a new solution to the complex problems of contaminated sites? No. Not at all. Lets look carefully at one example. In a community in upstate New York, EPA proposed using a low temperature "thermal extraction" system to clean up a contaminated site. This method involved excavation of contaminated soils and then placement of these soils in a heat treatment device. EPA passed out fliers that described the process and made it clear that this treatment method did not incinerate the soil as typically occurs in an incinerator.

Instead, "heated air" (there was no explanation of how the air is heated) is passed over soil driving volatile chemicals out of the soil and into the air. This contaminated air is then passed through air pollution control equipment that removes particulate and acid gases.

Giving EPA the benefit of the doubt, assuming that they really aren't "incinerating" the soil, this thermal treatment method is, as a practical matter, no different than if the soil was actually incinerated. Systems that "separate" chemicals from soil by using heat may be slightly different than commercial incineration systems, but this doesn't change the basic function of the machine. Volatile gases are still formed during the treatment process which results in toxic chemicals being released out a stack that is fitted with air pollution controls. In the end, the results are essentially the same.

If it looks like a duck, walks like a duck and talks like a duck, then in all likelihood it is a duck. There's going to be little, if any, difference between the emissions of a "thermal treatment" system and an incinerator. Whatever is burned in the burner will end up in the stack gases; products of incomplete combustion (PICs) will be formed; toxic ash (the soil in this case) will remain and contaminated wastewater will be generated. In addition, there are transportation, storage and handling issues that need to be addressed.

In those situations where contaminated soils from LUST are burned, the companies are saying that the petroleum hydrocarbons from the gasoline will be destroyed in the process with nothing left over. This simply is not true. One of the major issues with leaking gasoline storage tanks is the additives found in gasoline.

These additives include tetra ethyl lead, ethylene

dibromide (EDB), ethylene dichloride (EDC), benzene, toluene and xylene. These additives are the worst components of gasoline. They are also the most toxic and pose the greatest threat to public health and the environment (see box on the toxicity of gasoline additives).

Burning/thermal treatment is a poor choice for these soils because the additives are so hard to destroy. Lead cannot be destroyed by incineration/burning/thermal treatment, so whatever lead is in soil to start with will either remain in the soil or be volatilized onto particulates that escape with the stack gases. EDB and EDC are also very difficult to destroy because of the chlorine and bromine bonds that hold them together. They also will remain in the soil or be volatilized and escape with the stack gases. Benzene, toluene and xylene can be more easily destroyed, but a portion of these chemicals will also end up in the stack gases.

Why will this happen? Because no incinerator/burner/thermal treatment unit can destroy 100% of the waste that is burned no matter how well designed. Whatever goes in to the burner will also come out into the air, land and waterways of the surrounding community. Incinerators cannot achieve in practice what is predicted in theory. Even with state-of-the-art emission controls, you cannot eliminate toxic emissions. Not even the best available air pollution controls are 100% effective.

Making matters worse is the fact that some companies are claiming they will "recycle" the soil after it has been treated. By claiming to "recycle" the soil, EPA exempts these companies from having to comply with the usual rules and regulations that apply to the handling, storage, transport and disposal of hazardous waste. Companies are making this argument to avoid the costs associated with complying with these regulations. As a practical matter, this means that there will be few if any controls over how the soil is burned. By using this "loophole" to avoid complying with federal regulations, companies are free to do whatever they want with the contaminated soil.

Cleaning up of contaminated soils does not require incineration or thermal treatment. There are alternatives to these methods. One is called "Vacuum Extraction." This technique uses pumps to suck gasoline fumes right from the ground passing it through a series of filters which capture the contaminants.

So in the end, the incinerator/burner/thermal treatment unit, whatever you want to call it, is doing little more than transferring the chemicals from the soil to the air. Very little destruction of toxic chemicals occurs. As a result, you need to look at these proposals for what they are - a poor choice of technology that is motivated more by politics and profits than by scientific data or common sense. To fight these proposals you need to organize your community and put pressure on the decision-makers. Contact CCHW for help on how best to do this.

For more information on hazardous waste incinerators, see CCHW's guidebook "Incineration: The Burning Issue," available for $9.95 plus postage and handling. This guidebook describes the pros and cons of incineration, the health risks they pose, includes strategies for dealing with one in your community and includes a list problems found at operating incinerators around the country. The information in this guidebook will give you a good idea of what the issues are and how to deal with them.

This article is a reprint, with some modifications, which originally appeared in Everyone's Backyard, Vol. 9, No. 6-December 1991.

The Health Effects of Gasoline and its Additives:

From the File of CCHW

Tetra ethyl lead: Learning disorders, anemia, encephalopathy, congenital abnormalities, neuromuscular dysfunction and cancer.

Ethylene dichloride (EDC): Liver and kidney disorders, eye damage, central nervous system (CNS) problems and cancer.

Ethylene dibromide (EDB): Skin and eye irritation, CNS problems, liver and kidney damage, cancer.

Benzene: Leukemia, CNS problems, liver damage, bone and blood disorders.

Toluene: CNS problems, liver and kidney damage.

Xylene: CNS problems, liver damage, irritant skin, upper respiratory irritation.

Gasoline itself: Irritation of the skin, eyes and upper respiratory system, CNS problems, liver and kidney damage.

Center for Health, Environment and Justice

Questions About Soil Burners

1. What chemicals are present in the soil to be burned? Provide a specific list.

2. Where will the contaminated soil come from? What are the sources of the soil?

3. How will the company monitor the soil to determine what's in it? Provide a description of the testing protocols and procedures.

4. How often will the soil be tested? i.e. once a week? once a day?

5. How large a sample will be taken? i.e one handful per ton?

6. How will you guarantee that PCBs and other toxic chemicals won't be present in the soil to be burned? Now and in the future?

7. What, if any, pretreatment occurs on site? Is the pre-treatment process open to the air?

8. Are any chemicals "lost" or released during the pre-treatment process? i.e. do chemicals in the soil evaporate during pre-treatment?

9. Are storage facilities/areas enclosed? If not, why not? Won't volatile chemicals present in the contaminated soil evaporate? (yes they will).

10. What are the anticipated annual pollutant emissions (tons/year) released from the burner? based on average operating conditions; based on worst case conditions when the burner does not operate perfectly. You could also ask the company to provide emissions numbers in lbs per hour or convert them yourself.

POST OFFICE BOX 6806
FALLS CHURCH, VIRGINIA 22040-6806
(703) 237-2249

This list should include at least the following chemicals that will be released:

Heavy metals: lead, cadmium, chromium, mercury, arsenic.

Volatile organic chemicals (VOCs): benzene, toluene, xylene, ethyl benzene, ethylene dichloride (EDC), ethylene dibromide (EDB) and total halogenated organic chemicals.

Particulates, acid gases, hydrocarbons, nitrogen oxides, sulfur dioxide, and carbon monoxide.

11. What is the toxicity of each of the substances that will be released from the burner?

12. How will you avoid the formation of Products of Incomplete Combustion (PICs) in the burning process?

13. Will air emissions testing include looking for dioxin, the most common PIC formed during the burning of chlorinated chemicals such as ethylene dichloride? If not, why not?

14. How high is the emissions stack? How was the height determined? On what basis? Was the height been determined to minimize fallout of air emissions in the community? If not, why not?

15. Has air pollution modelling been done to determine potential air impacts on people living downwind and immediately around the burner? If so, what air specific air pollutants/emissions have been modelled?

16. Using the air models and/or other information, has the health risks the burner poses been determined for people living downwind and immediately around the buner? If so, what are health risks for cancer and non cancer health effects, for these two target groups? What was the basis for the risks assessments? i.e. what chemicals did they use to estimate exposure and what emission levels did they use to makes these estimates?

17. What air pollution control equipment is installed on the burner to control emissions? What specific pollutants are controlled by each type of equipment. i.e. electrostatic precipitator and bag house filter only remove particulates; scrubbers only remove acid gases.

18. How will particulates emissions specifically be controlled? The contaminated soils is likely to contain large amounts of lead which volatilize at about 600 degrees. Will the buner temperature be this high? If so, large amounts of lead may be released into the community.

Lead is a highly toxic and substance that cause birth defects, cancer, central nervous systems problems and is especially toxic to young children.

19. What is the pre-dominant wind direction at the site? How many people will be affected by the buner? How many people live immediately downwind from the site? within 1/2-mile of the site? within 1 mile of the site?

20. How far will the chemicals released from the burner travel?

21. What are the post-treatment soil testing protocols and procedures? How often will testing be done? How large a sample will be taken?

22. What is the impact of truck traffic delivering contaminated soil and returning treated soil to/from the site on the surrounding community? How many trucks are expected passed each day? What is the basis of this number?

23. How much water will be used at the site? Water is needed to cool the soil, control dust and may be used in air pollution control equipment.

24. What will be done with the waste water generated by the treatment process? How will it be disposed of? Do you have the proper permits?

25. What are the testing procedures for determining the chemicals/ contaminants in this waste water? How often is this testing done?

26. How will surface water runoff from the site be controlled? i.e. rainfall will pick up contaminants in the soil generating a "leachate" that will migrate off site in the general direction of the surface topography.

27. Is there an on-site accident prevention plan? If, so could you provide the community with a copy?

28. Is there a contingency plan in the event of an accident/ breakdown on-site? If so, could you provide the community with a copy?

29. What is the compliance history of the company?

30. What is the track record of the company in burning contaminated soil?

31. What is the experience of the operator in burning contaminated soil?

32. Who will ensure that everything you claim you will be doing is actually done?

In Our

OPINION

Soil Burner Operators Violate Public Trust

The lifeblood of any community is its ability to generate tax revenue so it can provide services to its residents. An essential ingredient for this is the ability to attract business to a community. Communities must attract business in such a way that they are not harmed either financially or physically by the location of a firm there.

By the same token, businesses must realize that a trust is bestowed upon them when they are allowed to build and operate in a community. This is especially important for businesses to remember when new relatively unproven or untested technologies are involved. Unfortunately, Ira Conklin and TPS Technology of Florida along with the Department of Environmental Conservation, to a lesser degree, have forgotten this tenet of business operations.

When the River Road, New Windsor soil burner site was first proposed, a firestorm of public opposition to it swept the area. Questions about its safety were raised in numerous public meetings and, to their credit, TPS and Conklin tried to allay these concerns by inviting the media to a question and answer session which included a tour of the facility.

They even went so far as to promise the public a chance to comment on their application for a permit to operate. But, this was a promise unfulfilled. At the end of May, TPS requested their permit and effectively stifled any meaningful public comments. Hardly a trust building move.

Now, the operators of the soil burner want to bring in materials not covered under their original permits. These are materials, which according to New Windsor Supervisor George Meyers, they said they would not bring in. If this promise was made, then what does it say about the people who made it? If they repudiate their own statements, how much stock are they going to put in the trust bestowed upon them by the community to operate a business in a safe and conscientious manner?

Another public comment period has been established concerning the new permit application. A DEC official, according to one publication, has said they welcome public comment.

Really? If that were the case, why didn't they insist on it before the permits were issued in June?

All the events surrounding the soil burner indicate that building public trust appears never to have been a concern of TPS and Conklin. It also has certainly shown how little the DEC cares about its role as public watchdog.

If TPS, as well as the DEC, expect to make the soil burner a lasting concern, then the appearance of uni-lateral action should be discarded and an attitude of co-operation should prevail.

Soil Burner Put On Hot Seat

by Richard Durbin

Questions, comments, and concerns about the soil burner on River Road in New Windsor continued this week as the facility was cited for two zoning violations and told to appear in New Windsor Town Court on July 31 to answer the tickets issued for those violations.

New Windsor Supervisor George Meyers revealed this week that as part of the town's written response to TPS Technology's application to modify their operating permit, he will include references from Planning Board meeting minutes that indicate Ira Conklin did not plan on treating the types of soils covered in the permit modification application.

If approved, these permits will allow the site to treat soil contaminated with manufactured gas products. The main by-products of heating such soils include hydrogen cyanide and sulfur dioxide.

According to records in Meyers' possession, during an April 27, 1994 Planning Board meeting, Ira Conklin said, "we're dealing with everyday gas station and home heating oil" as the soil contaminates. Meyers questioned the forthrightness of the soil burner operators with the Planning Board on what they will ultimately treat at the site especially given recent reports noting that at six of their seven sites MGP contaminated soils are treated.

Meyers also tied the new permit application in with the zoning violation tickets issued recently.

"If we don't trust them to close a door on time, how can we trust them on what they will burn there," observed Meyers.

The tickets were issued after TPS failed to take corrective action when complaints about dust and noise were brought to their attention. Under their operating guidelines, the doors of the soil burner facility must be closed from 7 p.m. to 7 a.m. and that soil at the site will be covered or watered down to minimize dust.

Meyers also raised the issue of monitoring the site to ensure compliance with Department of Environmental Conservation guidelines on air emissions. Meyers questioned the method of self-monitoring in which the operator sends a sample to a state laboratory to see if they meet the appropriate guidelines.

Meyers would like to see the DEC monitor the site along lines similar to the random drug testing of police officers and truck drivers in which the tester shows up unannounced and asks for a sample. Meyers implied that this ensures compliance by having the person being tested always ready to pass the test; "you don't need to be a genius to figure this out."

"The biggest problem I have (with the soil burner) is the noise and the dust from the soil," commented Mike Lucas, a New Windsor Planning Board member and owner of property across the street from the soil burner.

"They never tried to be good neighbors," observed Lucas, who supported the project because he felt Conklin would run it well. "They never asked what they can do to be good neighbors, they disregarded the neighborhood. Conklin wouldn't do this, it's TPS."

Lucas feels that if anyone has complaints about the site they should call Conklin about them and not TPS.

"Is it good to read (about new permits) in the newspaper, instead of hearing it as neighbors," questioned Lucas. "Couldn't they have at least told the Planning Board or Town Board they were soils in addition to their original permits?"

Lucas, as a private citizen, helped verify the complaints about the noise and dust coming from the soil burner. He remarked that John McDonald, New Windsor fire inspector, issued the tickets and that he took pictures within the last ten days to substantiate that the site still had not complied with the regulations concerning dust. Earlier this year during a Planning Board meeting at which TPS sought to expand their hours, Lucas stood down from the Planning Board members podium and spoke from the audience as a private citizen about his concerns regarding the facility.

"I don't want it to close," said Lucas. "I want it to operate within the rules agreed upon in the beginning and keep the operation clean and quiet with respect to its neighbors."

orange county

Doc sees danger in plan

Cooker emissions may harm asthma sufferers

By DAVE L'HEUREUX
Staff Writer

NEW WINDSOR — Allowing TPS Technologies to destroy coal tars at its River Road plant could harm thousands of people with respiratory disorders, a local allergist warns.

Dr. Parrinello

Dr. John T. Parrinello says even trace emissions of sulfur dioxide and hydrogen cyanide from the plant could hurt those with hyper-reactive airways, better known as bronchial asthma.

"About one in every 15 Americans suffers from bronchial asthma," he said. "These fumes would put a considerable part of the population at risk."

A resident of Cornwall, Parrinello is board-certified in allergy and clinical immunology. During an interview at his Fishkill office, he said he has long been concerned with TPS.

TPS already has state permits to cleanse petroleum pollutants from soils by subjecting them to temperatures of 1,550 degrees. Now its operators are seeking to modify their DEC permits so they can cleanse coal tars — the by-products of a technology, abandoned more than 30 years ago, that created natural gas from coal.

The state Department of Environmental Conservation announced last week that it had decided the TPS coal tar proposal would pose no significant threat to the environment.

DEC further noted that allowable emissions of sulfur dioxide, which can irritate the breathing passages, could increase to 29.7 pounds an hour.

Emissions of hydrogen cyanide, which can deprive cells of oxygen, could go up to 0.5 pounds an hour if DEC modified the existing TPS permits to treat soils contaminated with coal tars.

"These DEC thresholds blow my mind," said Parrinello. "Just what is the proper threshold for sulfur dioxide or hydrogen cyanide?

In a recent interview, Robert Stanton, an air quality engineer for the regional DEC office, noted that sulfur dioxide was "definitely a contaminant of concern."

"That's why the (TPS) facility would have to limit the amount of coal tar soil it could burn," he said.

DEC noted that the TPS could "cook" coal tars from contaminated soils without requiring any expansion or retrofitting.

Meanwhile, state Sen. William J. Larkin, Jr., R,C-New Windsor, has asked DEC officials to meet directly with the New Windsor Town Board on this issue.

TPS's closest neighbors also remain unhappy about what they say are large quantities of dust emanating from the plant along River Road.

"We just want them to close the (front) door, and water down the dust so it doesn't come out," said Michael Lucas, a member of the New Windsor Planning Board.

The New Windsor fire inspector last week issued two tickets to TPS operators, accusing them of violating town zoning ordinances concerning dust and noise.

DEC is taking public comments on the TPS coal tar proposal until July 26. Comments on the draft permits can be sent to Michael D. Merriman, NYSDEC Division of Environmental Permits, 21 South Putt Corners Road, New Paltz, N.Y. 12561-1596. The e-mail address is:

Mike.Merriman+ec.mailnet.state.ny.us.

Local Issues

Local Incinerator Battle Will Set a Course for State Policy

Nearly every community has one: a proposed source of pollution or environmental destruction that would threaten the health or quality of life of its residents. Most environmental laws allow the public to comment on proposals with significant environmental impacts, but neighbors are still frustrated by their inability to influence final decisions. Citizens are often overwhelmed or intimidated by a seemingly endless morass of technical and regulatory complexity. Those who wade into the morass find that most environmental laws contain loopholes or other critical weaknesses that work against them. To make matters worse, decisionmakers often dismiss the concerned neighbors as *NIMBYs (Not in my Back Yard)*.

In the last year and a half, a group of citizens in New Windsor (Orange County) have found themselves plunged into this classic situation. They have raised concerns about plans by two companies to treat contaminated soil at new plants in their town. The companies use a process called thermal desorption to treat soil contaminated with petroleum products. The process involves heating the soil to vaporize contaminants, which are then incinerated. The citizens, who formed Citizens United for a Responsible Environment (CURE), are concerned about the effects of the plants on air quality and property values. They are also concerned that the plants, once established, may one day expand to treat more toxic types of contamination.

Neighbors of the soil treatment plants first learned of the projects when construction began on the sites. By that time, the Town of New Windsor had already made a critical decision not to require environmental impact statements (EIS), and the Department of Environmental Conservation (DEC) had issued permits for construction. In the months since, CURE, Scenic Hudson, Citizens' Environmental Coalition, and other environmental groups, have taken a closer look at the DEC rules and permits for the soil treatment facilities and have recommended specific changes to the DEC.

Currently, one of the soil treatment plants (on a residential street) is on hold since the company is being taken to court for storing contaminated soil without a permit. The other plant is operating pending final air permits from the DEC.

Community Concerns

The citizens are concerned that DEC's permit requirements provide inadequate protection of air quality and human health. Before the soil is treated, it is tested for certain contaminants including some (e.g., heavy metals) that are not destroyed by the process. But the list of contaminants is limited, and the concentrations permitted in the soil are calculated to protect ground water, not air. In addition, the permit requirements do not address the long-term cumulative health effects of uncombusted and partially-combusted petroleum compounds like benzene, as well as other potential compounds like pesticides and gasoline additives in the air. It appears that the actual health threat of the air emissions will never be known because the DEC has studied the health risks of only one contaminant and does not plan to monitor air emissions.

The citizens and environmentalists have had some effect on the DEC's oversight of the soil treatment plants. For example, the DEC produced a guidance document for the facilities, which includes restrictions on the use of treated soil and expanded testing of soil before and after treatment. The guidance document will add consistency to the requirements for these plants as more are proposed in communities around the state. Despite the gains, the DEC's requirements for the plants are deficient. For example, the air quality standards still ignore the combined effects of contaminants, and there still is no requirement for monitoring of air emissions. It is impossible to regulate what is not measured.

> *It is impossible to regulate what is not measured.*

Not Just a NIMBY

The New Windsor soil treatment plants have a significance much broader than their local impacts. There are important precedents at stake, because they are the first permanent facilities in New York for operating mobile equipment currently used only temporarily at contaminated sites. The permits and regulatory guidance developed for the New Windsor plants ultimately will affect communities across the state where other plants will be proposed. Therefore, it is appropriate to give special scrutiny to important details like which chemicals will be tested in contaminated soil, the basis of contaminant limits, the frequency of air pollution monitoring (if any), and allowable uses for the treated soil.

There is a need for the soil treatment technology and companies like the one currently using it in New Windsor—both contribute to timely cleanups of contaminated sites. However, we must not lose sight of the need for regulatory safeguards and oversight to protect local communities across the state. The DEC soon will accept public comments on the permit guidelines for these plants. For more information, call Scenic Hudson at (914) 473-4440.●

Josh Cleland, Environmental Assoc., Scenic Hudson

SCENIC HUDSON INC
9 VASSAR STREET • POUGHKEEPSIE, NY • 12601 [914]473-4440

ACTION ALERT

NEW WINDSOR SOIL BURNER

NYS Department of Health Suggests Tighter Environmental Controls

---

For nearly two years, Scenic Hudson has advocated stronger environmental controls for a petroleum-contaminated soil treatment facility (a.k.a. soil burner) in New Windsor, New York. Working with a local group opposed to the facility, Citizens United for a Responsible Environment (CURE), we have made the case that the NYS Department of Environmental Conservation (DEC) and the Town of New Windsor, did not adequately consider the impacts of the facility before granting initial approvals.

Last year, Scenic Hudson, Citizens' United for a Responsible Environment (CURE), the Citizens' Environmental Coalition, and others asked the NYS Department of Health (DOH) to investigate some of our concerns about the New Windsor soil burner. DOH released its report on September 5. A copy of the report can be obtained by calling 1-800-458-1158. Ask for the "Preliminary Assessment of Air Contaminant Impacts, TPST Soil Reclamation Facility, New Windsor, New York."

The DOH report is helpful because it backs up some of our main concerns about the soil burner:

- The facility is able to accept unreasonably high concentrations of non-petroleum contaminants (e.g., heavy metals, PCBs and other toxic organic compounds);
- Stack emissions of PCBs, arsenic, mercury, and other contaminants could exceed DEC's Air Guide Concentrations (AGCs) or other health-based standards;
- There is an unjustified loophole that allows the soil burner to treat even higher levels of non-petroleum contaminants on a case-by-case basis with permission from DEC; and
- Additional pre-treatment soil testing appears to be appropriate.

Unfortunately, DOH's recommendations are worded weakly and DEC is not obligated to make any changes. DEC might ignore the new findings if there is no public pressure for better environmental controls.

WE CAN STILL MAKE A DIFFERENCE

It is not too late to make a difference. DEC has not yet issued a final air permit for the New Windsor soil burner, in part because we urged them to wait for the DOH report. Your help is needed to make DEC act on the DOH findings for the final air permit.

September 18, 1996

(over)

In July, DEC completed a guidance document for soil burners elsewhere in the state. Against Scenic Hudson's recommendation, DEC finalized the guidance before DOH finished its analysis of the New Windsor soil burner. Since the environmental requirements in the guidance are nearly identical to those for the New Windsor facility, DEC should revise the guidance to address the deficiencies identified by DOH.

PUBLIC COMMENTS COUNT

For much of the past two years, it has seemed that concerns about the soil burner have fallen on deaf ears at DEC and the Town of New Windsor. But your efforts have already had some important results, including testing for PCBs and other toxic organics, and restrictions on the use of treated soil. In addition, the new report from DOH would not have been written without your many calls and letters. However, DEC is likely to ignore the DOH's findings unless there is renewed interest from the public.

WHAT YOU CAN DO

1. Write short, to the point letters to DOH and DEC:

   - Tell them your concerns about the soil burner;
   - Request better soil testing and air emissions standards for soil burners; and
   - Insist on air emissions monitoring.

   The author of the DOH report is:

   Dr. John Hawley, Research Director
   Division of Environmental Health Assessment
   NYS Department of Health
   II University Place
   Albany, NY 12203-3399

   He will forward your letter with his own comments to DEC's engineers, but we recommend that you also send copies of your letter to:

   Mr. Mark Moran, Regional Director
   NYS DEC, Region 3
   21 S. Putt Corners Road
   New Paltz, NY 12561

   Mr. John Higgins
   NYS DEC, Bureau of Stationary Sources
   50 Wolf Road
   Albany, NY 12233

2. Write a letter to the editor of the Times Herald Record and New Windsor Sentinel:

   Times Herald Record
   PO Box 2046
   40 Mulberry Street
   Middletown, NY 10940

   New Windsor Sentinel
   PO Box 406
   Vails Gate, NY 12584

If you have any questions or would like a copy of Scenic Hudson's comments on the DOH report, please call Joshua Cleland at Scenic Hudson (914) 473-4440 ext. 223.

Walport plan turned down by township

Pottsville (PA.) Republican

Application for soil plant in Summit Station rejected

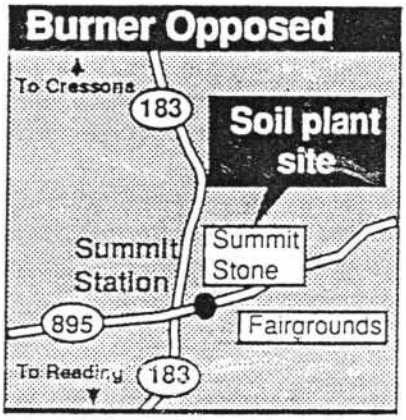
By Alex Nussbaum 12/17/92
The REPUBLICAN

REEDSVILLE — A Reading company's attempt to install a petroleum-contaminated soil processing plant near Summit Station ended Wednesday when the Wayne Township supervisors rejected its land development plan.

To the applause of 22 people, the decision sent Walport Corp. back to square one of the permitting process. Approval of the development plan is necessary before the company can seek a township zoning permit for the burner.

If Walport is still interested in the site, it must now submit a new land development plan to the township's planning commission.

Chairman Supervisor Larry L. Luckenbill said the plan was rejected because it did not include a Highway Occupancy Permit from the state Department of Transportation (PennDOT), not because of local opposition to the project.



Heidi B. Masano, an attorney representing Walport at Wednesday night's meeting, said she did not know if the company would submit a new plan. Masano is associated with Fry & Golden, Reading, Walport's law firm.

Officials at Walport's Reading

Please see PLAN/Page 6

Wayne Township rejects

PLAN/From Page 1

office could not be reached for comment this morning.

Walport proposed building the plant on 11 acres of land along Route 895 next to the Summit Stone quarry. It would process up to 50 tons per hour of petroleum-contaminated soil and use the treated dirt to make asphalt.

The land, the quarry and Walport are all owned by Windsor Services, Inc. of Reading.

The project still needs a PennDOT permit and air-quality and waste-management permits from the state Department of Environmental Resources (DER).

Dennis R. Toomey, permit engineer in PennDOT's Allentown office, said PennDOT has not heard from the company since its highway permit application, filed under the name JPBH Corp., Reading, was returned July 28 for minor corrections and a study on the impact of the project on traffic.

The director of DER's air quality permit section in Wilkes-Barre, Babu Patel said the air permit application is still being reviewed.

The supervisors' vote came after Masano requested a 90-day extension for Walport to complete the development plan, which was supposed to include the DER and PennDOT permits. She said changes in DER forms and regulations had delayed permitting decisions.

However, the supervisors said Walport had run out of time.

"You've had one year," Luckenbill said, adding that the planning commission had forwarded the plan to the supervisors in January. "You should have had your paperwork in order when you submitted your application. Most people do."

"Quite frankly, we were just tired of having it in front of us ex-

soil-burner proposal

tending and extending," Luckenbill said.

Masano said the delays were due to DER's not providing Walport with the new forms needed for permit applications. She said the company's original applications were submitted months ago.

"They were in and in compliance in April," she said. "I feel like my client has been put in a Catch-22 situation."

Most of the people who attended the meeting are members of Citizens for a Healthy Environment (CHE).

"We salute Wayne Township's decision to deny this application," said Citizens co-founder Kate Potter. "This is a lovely Christmas present for CHE."

However, members said they would continue to speak out against the proposed plant.

"What happened tonight is not any indication that (Walport) will give up; we have no reason to believe that," said Thomas R. Smith, a member of the group's executive council.

Luckenbill and Supervisor Mark L. Schropp would not speculate as to whether Walport will submit a new land development plan.

"Maybe they'll let it drop," Schropp said. "Hopefully, they will."

Plans to build a similar plant in Blythe Township were dropped last month by Clean Waste Control Inc., of Kearny, N.J., after DER rejected its residual waste permit application and after the company encountered local opposition.

A third soil incinerator slated for a Carbon County site two miles east of Andreas is in jeopardy because the project's building permit has expired. That plant was proposed by East Penn Recycling, a subsidiary of Tamaqua-based Lehigh Asphalt Paving & Construction Co.

Summit Station group opposes soil incinerator

July 9 1991

By Karen Hube
The REPUBLICAN

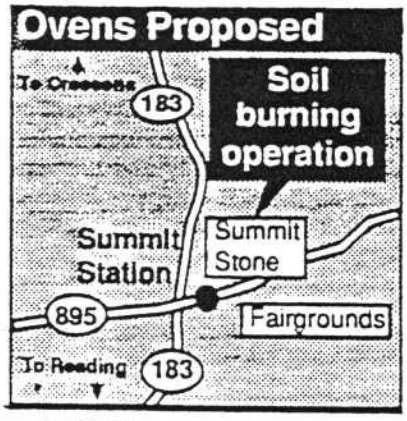
SUMMIT STATION — Some opposition to a proposed contaminated-soil burning plant on Route 895 here is surfacing.

Neighbors last week formed a group — The Coalition of Citizens Against Incineration.

A petition — titled "Operation Valley Shield" — contains a statement urging people to stop construction of the plant and appears to bear about 100 signatures.

"Our gut feeling is — incineration is unhealthy, it's bad," said Kate Potter, a spokeswoman for the coalition.

Coalition members plan to attend the Wayne Township Board of Supervisors meeting at 7:30 p.m. July 17 to discuss the proposed plant. Any residents wishing to speak out at a town meeting are required to contact the township secretary prior to the meeting.



Until this point, plans for the plant progressed unchallenged through the environmental permitting process.

"I don't think people really thought it was going to go through," said Zack Murray, who lives on Route 895 less than half a mile from where the burner would be built. Now, he said, more people are

(Please turn to page 16)

Group opposing soil incinerator

(Continued from page 15)

earning the proposal is being reviewed by the state Department of Environmental Resources (DER) and could soon be a reality.

The plant is proposed by Walport Industries, Reading, a sister company of Windsor Service Inc., which owns an asphalt plant and Summit Stone Inc., a quarry, at the same area targeted for the soil burner, across from the Schuylkill County Fairgrounds.

The application DER is reviewing is for an operation with the capacity to burn 50 tons of petroleum-contaminated soil per hour. A 2,000-ton storage structure would be built on site.

"I need more information," said Kevin M. Shire, who lives on Summer Hill Road, south of the site.

"I'm very concerned with what they're going to be breathing," he said, pointing to his two pre-school daughters in his back yard.

Curt Malizzi, president of CM Environmental Service Inc., Morgantown, Walport's consultant, said if he had children who lived near a plant like the one proposed, he would have no worries.

"I absolutely feel that — no problem at all," he said.

Malizzi summed up the operation:

The soil would first pass through a unit, which would heat it and turn the petroleum into vapor. The vapor would travel through a duct into a furnace — called an "after burner" — where temperatures reach around 1,500 degrees and the contaminants are completely destroyed, he said.

The air from the process would pass through a "heat exchange," which would cool it enough to pass through a "bag house" — a large filter.

From there, the filtered air goes up the stack and out of the plant.

"Nothing is released without going through the after burner and bag house — and then a stack," Malizzi said.

Equipment in the plant would have monitors to alert operators if the system malfunctioned, he said.

"This plant is very safe, not only from a technical standpoint, but also from a public standpoint," Malizzi said. "It's not going to be a dirty industrial site. It's a very clean operation."

Potter said she wants to find out for sure.

She said there are still many questions to be answered and the coalition is trying to gather as much information as it can about the proposed operation.

Wayne Twp. goes against burner plan

Proposal unsatisfactory, environmental study says

By Erica Franklin
The REPUBLICAN

REEDSVILLE — Engineers who conducted an environmental study of a proposed soil burner for Wayne Township recommended the project not be permitted as is because it could be a potential health risk and might pose other problems.

As a result, the township supervisors, who commissioned the study, issued a statement Wednesday night, saying they did not support Reading-based Walport Corp.'s proposed contaminated-soil treatment plant.

It was the first time the supervisors had taken a stand on the burner since Walport filed for its Department of Environmental Resources (DER) permits last spring.

Walport has proposed building the burner on 11 acres of land adjacent to the Summit Stone quarry near Summit Station owned by its sister company, Windsor Services Inc. It would roast up to 50 tons per hour of petroleum-contaminated soil and use the treated soil to make asphalt.

"After due consideration of the concerns in the report ... we've learned in order to address deficiencies in its permits, Walport may

(Please turn to page 6)

Based on study, township opposes burner

(Continued from page 1)

have to make changes to its land development plan and permit application," Supervisor Chairman Larry L. Luckenbill read from a prepared statement.

"We feel it's in the best interests of the Wayne Township supervisors not to consider approval in its original form," he said.

The statement was met with applause from about 70 residents who attended Wednesday's meeting.

Both Walport's President George A. Walborn and its engineering consultant, Curt P. Malizn, were unavailable for comment this morning.

The company's air quality and solid waste permits are still under review by the state Department of Environmental Resources (DER).

The township supervisors, at the request of the study's author, Camp Dresser & McKee Inc. (CDM), Lancaster, hand-delivered copies of the report to DER officials Tuesday.

A copy was also forwarded Wednesday to Walport. And it will be available today to the public in the municipal building during office hours.

Based on a review of Walport's permit applications, correspondence and other documents, CDM engineers found much information about the plant "misleading or incomplete," the study states.

The study "confirms our concerns over emissions into the air, the blending of soil, possible explosions, storage practices, storm water runoff and ground water contamination," members of the local grassroots group Citizens For a Healthy Environment said in a prepared statement this morning.

However, the study assumes Walport will only be taking in "virgin" petroleum-contaminated soil. CHE members Lee V. MacCaul, and Thomas R. Smith said in the statement. And Walport has made no assurances the incoming soil will not contain other substances such as dioxins and PCBs from old transformers, they said.

Given the information supplied by the company, some of CDM's concerns include:

- The plant may emit more than 50 tons per year of toxic compounds, such as the carcinogen benzene, which are in the petroleum and be less than 99 percent efficient in destroying those compounds.

They must meet the 50 and 99 percent standard — the lowest achievable emissions rate — to comply with the requirements of the Clean Air Act of 1990, according to CDM.

- The permit applications do not, but should, state annual pollutant emissions based on the average amount of soil fed into the burner. Nor do they include benzene or lead emissions.

Moreover, a plan for monitoring the operating conditions at the plant to ensure it is running safely should be provided.

- Depending on wind direction, wind speed and other variables, emissions from the plant may affect residents living on the steep slopes to the north of the site in Summer Hill.

Based on air-screening guidelines developed by New York (since Pennsylvania has none), CDM estimates the impact of benzene emissions from the plant at the ground level would be too high.

CDM requests Walport do a detailed assessment of its emissions impact on the site using specific variables, such as climate and topography.

- Walport should raise its stack height because it is not 2.5 times greater than the highest building proposed at the site, which is considered "good engineering practice."

- Walport does not, but should, include the method by which it will blend soils with high and low concentration of petroleum at the burner. It also should include how the blended soil will be tested for toxic compounds.

- Walport should consider having enclosed storage facilities for processing the contaminated soil.

- Walport should provide a contingency plan of other disposal facilities that would be willing to accept the treated soil if it does not meet DER's "clean fill" requirements.

- Walport's application provides no provision for treating storm water runoff from the plant, but should. Toxic pollutants may be found in the storm water.

- Walport has no means of assessing ground water quality once the plant has been operating. At least one on-site ground water monitoring well should be installed.

- DER and Walport should discuss and find a "reliable" method for testing the soils that come into the facility for their total concentration of petroleum compounds.

Residents meet to discuss fears about burner

By Anne Karolyi
The REPUBLICAN

SAINT CLAIR — They spoke of fear for their health.

They spoke of anger, environmental threats and corporate greed.

RHOADES

But when about 45 people gathered at a Citizens Against Incineration meeting here Tuesday night, one message was clear, especially to state Sen. James J. Rhoades, R-29.

"If you don't have the numbers, if you don't get vocal, you're going to lose it," said Rhoades. "You've got to band together and tell these people, you take care of yours, we'll take care of ours and stay out of here."

Citizens Against Incineration was formed by residents opposing plans of Clean Waste Control of Kearney, N.J., for a contaminated soil treatment plant in Blythe Township.

The group is also working with residents protesting a similar facility proposed for construction in Summit Station by Walport Industries, associated with Windsor Services of Reading.

On Tuesday night, residents planned their protest and discussed their options in battling the Blythe proposal, targeted for a site about three miles north of Saint Clair off the Burma Road.

"If they put these in we're going to die, and if we don't stick together and try to stop this that's what's going to happen," said Anna Inez of Friedensburg.

Rhoades said he has contacted the Department of Environmental Resources (DER) about holding a public hearing on the Clean Waste proposal, shortly after the company submits a permit application to the state.

Paul Brown, president of Con-

(Please turn to page 20)

Residents meet to discuss fears about burner

(Continued from page 19)

cerned Citizens of Schuylkill County, said he plans to contact the county commissioners to see if the issue of incineration can be included on a future ballot.

Several people at the meeting said they were writing to DER to protest the plant and request a hearing about the permit, the company's last requirement before beginning construction.

The Blythe Township Zoning Board approved a variance for the company to locate there and the township supervisors have gone on record supporting the plans.

The borough of Saint Clair has hired an attorney to battle the proposal at the state level, said council President John A. Shandor.

In the meantime, the group is pushing for public awareness and researching potential hazards from the plant.

Rhoades read from a list of 59 toxic materials, including 13 heavy metals, found in petroleum products. His source was a May 1988 report by the American Petroleum Institute of Washington, D.C.

Those materials, including benzene, arsenic, lead, mercury, cadmium, cobalt and toulene, are not destroyed during the incineration process, said Alfred A. Seiss Jr., the state representative for the National Coordinating Committee for the National War on Waste.

"They say they have state of the art equipment. A hammer may be state of the art but that doesn't prevent yourself from hitting your finger with it," he said. "Their equipment is good only for dealing with a precise amount of materials."

Seiss said Clean Waste's plan to deposit the ash in stripping pits will allow materials not destroyed during incineration to combine, creating more toxins. He said those toxins could infiltrate the ground and air.

Making the hazard even more threatening, state and federal standards for materials such as lead do not address the hazards of such toxins building up over time, Seiss said. For example, federal regulations for lead content in drinking water are more stringent than those for dirt processed in incinerators, which can sit for years in contact with ground water, he said.

The Blythe site is within a mile of the Silver and Wolf Creek reservoirs.

Bio-remediation, which uses enzymes to digest unwanted wastes, is a viable, cheaper option for the treatment of dirt contaminated with petroleum products, Seiss said.

Rhoades read an advertisement run by the nation's leading petroleum companies in California newspapers this spring. A state law there required petroleum companies to make information available about the hazards of their products. The advertisement said hazards range from cancers to birth defects.

Recent research shows incineration of any kind is hazardous, creating minute, toxic particles which can easily invade the body and lead to disease, said Joanne Rossetti, one of the organizers of the group.

The low risks the company is offering are dangers residents should not have forced upon them, Rossetti said.

"If I want to take a risk, I'll take a risk. Don't you force me to take a risk," Rossetti said.

Pat Eichman, one of the group's founders, said Clean Waste is trying a "divide and conquer" attack on the county, dividing residents with promises of jobs and financial benefits.

Rhoades said any promised financial gain, even if true, would not be worth the long-term health and environmental damage to the county.

"If I am guilty of having an interest in the health of my constituents, then I am," he said.

Before coming to Blythe, Clean Waste tried to locate at sites in Hazle Township, Luzerne County, and in Delano Township.

"The facts as presented by Clean Waste Control are a snow-job," Eichman said. "This is not a Republican or a Democratic issue. This is not a political issue. This is a serious environmental issue which will follow us for a long time."

About 15 members of Citizens Against Incineration are planning to attend a meeting at 7:30 tonight concerning the Summit Station proposal, said Donna Boyd, one of the group's organizers. The meeting will be held at the Friedensburg Elementary School along Route 443.

Ordinances restrict soil plant proposals

Pottsville (PA) Republican

E. Penn board says changes not directed at Tamaqua firm's incinerator plan

By Alex Nussbaum
The REPUBLICAN 1/13/93

ASHFIELD — Following an hour-long public hearing, the East Penn Township supervisors adopted two ordinances Tuesday night placing more restrictions on a proposed contaminated soil treatment plant.

Though solicitor William C. Schwab said the ordinances are not aimed at the soil plant proposal, the restrictions create another obstacle for East Penn Recycling, the Tamaqua-based firm which has proposed the facility in Carbon County.

Following the vote, company attorney Edward J. McKarski, Bethelehem, said his clients were still debating their next step. However, in an interview earlier in the day, East Penn Recycling co-owner Ronald S. Dmytrow indicated the project will continue.

"There's nothing in this regulation we can't live with," he said.

Dmytrow said his company would continue seeking a township building permit for the plant.

East Penn Recycling proposed the plant for a site off of Route 895, two miles east of Andreas. The facility would treat about 200,000 tons of petroleum-contaminated soil each year. The soil would be cooked at temperatures as high as 1,600 degrees Farenheit.

The petroleum would be vaporized, separated from the soil and, if the facility operates correctly, broken into less harmful chemicals.

However, the new ordinances place several restrictions on the

Please see ORDINANCES/Page 18

JANUARY 13, 1993

Ordinances restrict soil plant proposals

ORDINANCES/From Page 17

company and anyone else handling hazardous, municipal or other forms of waste in the township:

- The company will have to obtain a registration certificate from the township, in addition to permits issued by the state Department of Environmental Resources (DER).
- The company will have to prove the safety of the local water supply and provide cleanup funds if contamination does occur.
- The company will be required to present an emergency management plan spelling out the steps to be taken if contaminated material is spilled outside the facility.
- Unless the supervisors grant an exception, trucks hauling contaminated soil will be banned from township roads.
- Delivery of the soil will be limited to 7 a.m. to 5 p.m., Monday to Friday.

Five members of Schuylkill County's Citizens Against Incineration (CAI) attended the meeting to show their support for opponents of the project. Last year, the group successfully challenged a New Jersey firm's plan to build a similar plant in Blythe Township.

After the meeting, members of the Blue Mountain Environmental Association, a group opposing the facility, said they expect the controversy to continue.

"I'm glad for the ordinance, but I think we're still going to have a fight in front of us," said Michelle Beckett, the association's president. "We'll just wait and see. I'm ready for it."

The three-member board passed the ordinances without comment after an hour-long public hearing where opponents and the developers confronted each other.

About 40 township residents attended the hearing, almost all of them speaking out against the proposal. The treatment facility would pollute their water, land and children with cancer-causing dioxins, they said, and would attract other hazardous waste processors.

Thomas L. Blew, Dmytrow's partner in East Penn Recycling, sat at the back of the room along with McKarski.

The developers and their opponents accused each other of distorting facts about the facility and the ordinances during the hearing.

"Who's kidding who?" asked McKarski. "You are using this to prohibit perfectly legal activity. (Blew and Dmytrow) have as much a constitutional right to do what they see fit with their property as everyone else does."

McKarski said the restrictions were illegal, since they amounted to a zoning ordinance that restricted the use of a property.

But Schwab defended the board's actions.

"This is not aimed at East Penn Recycling," he said. "It never mentions East Penn Recycling. This is a very broad ordinance."

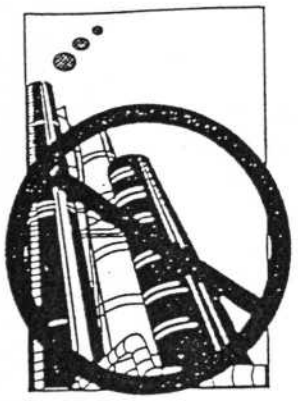
The board approved a permit for a 40,000-square-foot building on the site in 1991, according to Gordon E. Scherer Jr., chairman of the supervisors. Scherer said at the time the supervisors did not know the company intended to build a burner

The permit was revoked earlier this year because construction had not begun within six months of the permit being awarded. The company applied for another permit.

cai
Citizens Against Incineration

SOIL BURNERS

FACT SHEET



Soil that is contaminated with petrochemicals must be cleaned up. There are many methods of treatment available, but many corporations and individuals have applied for permits to thermally treat this contamination.

There are many problems with this primitive technology. In the proposed process, contaminated soil is heated in a chamber to remove water and volatile organics. Exhaust gases are vented to a secondary combustion chamber (the afterburner) where most of the volatiles are burned (incinerated) at 1,600° F. **It is just as correct to call this process "hazardous waste incineration" as it is to call it something else based on what happens in the primary chamber.**

Neither low nor high temperature thermal treatment can destroy heavy metals. Depending on the temperatures employed and the metals involved, the metals are either volatilized, in which case they are captured by pollution control equipment, or are released to the environment as stack emissions. **In every case the metals remain hazardous and a potential or actual source of water pollution, air pollution or direct inhalation.**

Some soil burners which have been studied in operation are only performing at **27% destruction efficiency. They are supposed to be 99.99% efficient.** Many types of soil such as clay make the process unfeasible. Clumps of soil remain contaminated after processing. In addition, PIC's (Products of Incomplete Combustion) will result. **Dioxins and Furans** will likely be created by the process itself! All of the right ingredients and conditions would exist to create these chemicals, the deadliest compounds known to science today. Breathing them in, absorbing them through the skin, or consuming them in food or water will increase your chance of getting cancer, nerve damage, reproductive harm, immune system damage and numerous other health problems.

These chemicals are fat-soluble. They enter the food chain and multiply as they move up.

Lead already contaminates the drinking water of 42 million Americans. Lead poisoning in children causes loss of hearing, decreased intelligence and growth retardation. In adults it causes fatigue, high blood pressure and heart disease. Miscarriages and stillbirths are also caused by low levels of lead in water.

Alternative Solutions

The good news is there are many other treatment methods that don't have the problems of incineration.

* **Bioremediation** - Natural microscopic organisms are employed to digest the contamination. This method is proven and efficient. It can be done right on-site, reducing the energy cost and risks associated with transporting the soil.

* **Soil Washing** - Removes heavy metals and semivolatile organics from the soilstream. 99.99% removal of heavy metals can be obtained.

* **Vacuum Extraction** * **Soil Flushing**
* **Chemical Extraction** * **In Situ Vitrification**
* **Chemical Treatment** * **Soil Venting**

Citizens Against Incineration • P. O. Box 372 • Pottsville PA 17901 • (717) 622-3279

REGISTER AND VOTE

The companies have not demonstrated an effective means of keeping PCBs and other dangerous chemicals *out* of the contaminated soil.

EVIDENCE OF CRIMINALITY

Windsor Services * was indicted, convicted, sentenced, and fined $1.2 million for crimes against the state of PA, of rigging paving contracts involving 26 counties over an 8-year period. Their then vice president, Richard Walborn (cousin to George Walborn who is president of both Windsor and Walport), served four months in a federal penitentiary on a plea bargain, admitting to—among other things— **destroying documents subpoenaed by a federal grand jury.**

* Windsor is Walport's sister company, and operator of an asphalt firm adjacent to the proposed burner site.

Clean Waste Control blatantly **violated our state laws** governing the permitting process. As late as 1991, they began pouring concrete for the proposed facility *without a permit*, until they were ordered to stop, and **fined, by DER.**

"The company denies it, but three men say **they were paid by Clean Waste Control to picket** outside of City Hall in favor of a soil-remediation plant..."

—POTTSVILLE REPUBLICAN, Jan. '92

Where do these proposals stand now?

DER is continuing its review of the applications. Many pages of deficiencies were found in the initial reviews, requiring ongoing revisions. Special attention is being paid to questions of adequate testing for hot loads, and the establishment of an actual need for new facilities of this kind.

PENNSYLVANIA CRIME COMMISSION 1991 REPORT:

"In short, the Commission's investigation and public hearings revealed startling evidence of organized crime's involvement in the waste disposal industry in the Commonwealth.

"Due to increased screening efforts of New Jersey, New York and Ohio, more organized crime operations are likely to move into the relatively peaceful regulatory climate of Pennsylvania."

EXTINCT MEANS FOREVER—THEY *DON'T* COME BACK.

WHAT'S SO BAD about a FUEL-CONTAMINATED INCINERATOR?

fact: Cancer and other terrible afflictions are among the known health effects of gasoline and its additives.

fact: The soil burners proposed for Wayne and Blythe Townships *will transfer toxic chemicals from the soil into the air.*

fact: Both companies proposing these burners have unsettling histories of breaking the law, and of showing little regard for the well-being of the citizenry.

fact: According to many engineers, the facilities being proposed are out-dated technologies of poor design, that will only add to today's serious pollution problems.

fact: Our Department of Environmental Resources (DER) is ill-equipped to protect us. They admit to being under-funded and under-staffed, and tell us plainly that the burden is on us, the people who live here.

fact: It is our RIGHT to determine whether we want to share our lovely communities with incinerators, or "soil burners." They *cannot* force them on us.

fact: There is no such thing as a "good incinerator" **unless you happen to own one!**

LEARN MORE INSIDE...

Produced for your information by

Citizens Against Incineration
CAI/P.O. Box 372/Pottsville, PA/17901

Citizens for a Healthy Environment
CHE/Box 68/Summit Station, PA/17979

WHO STARTED THIS ?

Three companies have applications under review by Pennsylvania Department of Environmental Resources (DER) to import and incinerate petrochemical-contaminated soil:

Wayne Township in Schuylkill Co., across from our County Fairgrounds! (Walport Corp., Reading, PA)

Blythe Township in Schuylkill Co., on the Burma Road, 1.5 miles above St. Clair. (Clean Waste Control, Inc., Kearny, NJ)

East Penn Township in Carbon Co. (East Penn Recycling, Inc.,Tuscarora, PA)

We *vigorously* object to these plans for many important reasons. Learn more, and help us win the fight.

THE HEALTH EFFECTS OF GASOLINE & ITS ADDITIVES

Tetra ethyl lead: Cancer, learning disorders, anemia, encephalopathy, congenital abnormalities, neuromuscular dysfunction.

Ethylene dichloride (EDC): Cancer, liver and kidney disorders, eye damage, central nervous system (CNS) problems.

Ethylene dibromide (EDB): Cancer, skin and eye irritation, CSN problems, liver and kidney damage.

Benzene: Leukemia, CNS problems, liver damage, bone and blood disorders.

Toluene: CNS problems, liver and kidney damage.

Xylene: CNS problems, liver damage, skin irritation, upper respiratory irritation.

Gasoline itself: Irritations of the skin, eyes and upper respiratory system, CNS problems, liver and kidney damage.

THE GOVERNMENT WILL *NOT* PROTECT US.

Since the Clean Air Act was signed into law in 1990, nothing has been done to enforce it. The Bush Administration has missed the deadline by eight months for regulations needed to make this law work.

Soil burners will contribute to acid rain, and ozone layer destruction.

Incinerator stack emissions pollute the air, land, and groundwater. Incinerators become large, hazardous-waste GENERATORS. Also, *new* hazardous-waste compounds are created: acid gas, heavy metal gas, furans, and **dioxins**—one of the **most toxic chemicals known to science.**

396 pounds per day of emissions would come out of Walport's stack, during maximum capacity of **1200 tons per day** of soil burning... Clean Waste could burn twice that much, or **2400 tons per day!**

Cleaner and safer alternatives ARE already available. Historically, contaminated soil has been treated right on site. The current proposals would import **hundreds of thousands of tons each year** to one small area. Emissions would then accumulate to create a newly polluted site.

Contaminated soil **would be imported** from up to 150 miles away, including **New York City, ALL of New Jersey,** and their various docks and terminals.

Hundreds of loaded tractor trailers will travel Route 895 and the Burma Road each day to supply the burners. They will *add* to the pollution, and add **danger** to our roads.

Peak traffic for the **Walport** burner could go as high as **114 tractor trailer** and **198 12-ton truck trips per day...** double that for the Clean Waste burner!

WHAT CAN WE DO?

- **Register**. And **vote**.

We have learned in the last year that the *power of democracy is formidable*. But, you have to **play to win!**

- **Communicate with elected officials.**

Our lawmakers are elected to represent us, our well-being, and all of our rights under the Constitution of Pennsylvania. They cannot represent our interests and concerns unless they know about them.

- **Call** your senators, representatives, and local government officials.
- **Write** letters to your senators, representatives, and local officials.

Let them know how you feel.

Tell them which legislation you want them to vote for, or vote against.
Example: Support HB 953 which places a moratorium on ALL new incinerators.

- **Keep watch**. Attending meetings of our local government reminds officials that they are *public servants who work for us.*

Blythe Township Supervisors—
when: 1st Wed. each month—6 pm
where: Blythe Twp. Munic. Bldg. in the old church in Kaska.

Wayne Twp. Planning Commission—
when: 2nd Tues. each month—7:30 pm
where: Wayne Twp. Munic. Bldg. on Route 183, near the State Police Barracks.

Wayne Township Supervisors—
when: 3rd Wed. each month—7:30 pm
where: Wayne Twp. Munic. Bldg.

- **Attend** all public ***hearings.***
- **Attend** public meetings of the groups **CHE, CAI, HVEA & GREENFIRE.**
- **Volunteer** to help out in some way.
- **Donate**... whatever you can.
- **Talk** with family, friends, and neighbors. Encourage them to act also.

• Lois Gibbs of Love Canal fame • will address a joint public meeting this October. Don't miss her amazing story!

CITIZENS AGAINST INCINERATION
P. O. Box 372
Pottsville PA 17901

1. Who is getting the benefits of this project?
2. Who is getting the risks of this project?
3. Are the answers to numbers 1 and 2 the same? If not, why not?
4. Who chose this site? Was it based on environmental reasons? Economic reasons? Political reasons? Was DER looking for the best site?
5. Is there competition for this project?
6. Have other communities rejected this project? You bet they have! Why?
7. Would it have a negative impact on property values? After property values go down, what impact would it have on tax base?
8. If property or persons are damaged by the project, who has liability?
9. Is the technology proposed the only solution? The best solution?
10. Should other steps be taken first?
11. HAS THERE BEEN ANY INDEPENDENT ASSESSMENT OF THE ENVIRONMENTAL RISKS? HEALTH RISKS? ECONOMIC RISKS?
12. Is there anyone in your community in favor of this project? Why?
13. Is the favorable information for this project coming from anyone but the vendor?
14. How will the state monitor and enforce its regulations?
15. What is their track record like?
16. What is the track record of the company like?
17. Are they trust worthy?

* * * * * * * * * *

Do you want an incinerator in Blythe Township that would process petrochemical contaminated soil?

Clean Waste Control, Inc., has applied for a permit to burn off contaminants from petroleum-soaked soil in Schuylkill County. Water will likely be used to cool the treated soil and gases produced when the soil is heated. Will this contaminated water pollute the area? How much water will they use?

Concentrated storage of contaminated soil also increases the risk of groundwater pollution. Petroleum could seep into the ground. According to Pennsylvania Wildlife magazine, just one (1) quart of motor oil can contaminate up to 2,000,000 gallons of drinking water.

In the book, But Not A Drop To Drink!, Steve Coffel states that just one (1) gallon of gasoline leaking into ground water can pollute the water supply of a city of 50,000 people. Is an incinerator worth this risk?

The American Petroleum Institute recognizes that petroleum products contain at least 59 hazardous chemicals that cause cancer, birth defects, and other reproductive harm. Included are arsenic, cadmium, chromium, mercury, nickel and lead. None of these heavy metals are destroyed by thermal treatment. Over time, when petroleum-laced soil is heated, even minute amounts will build up to become exceedingly serious threats to public health.

Think globally * Act locally

Heavy metals can cause birth defects and brain damage in children. They attack the central nervous system and cause cancer in adults. Kidney problems and dry, irritated skin are also signs of poisoning.

Lead already contaminates the drinking water of 42 million people in the U.S. Will Schuylkill County, which already has high lead levels, allow more lead into our system? Lead poisoning in children causes loss of hearing, decreased intelligence, and growth retardation. In adults, lead poisoning causes fatigue, increased blood pressure, and heart disease. Miscarriages and stillbirths are also caused by low levels of lead in drinking water.

We prefer the Four R's - Reduction, Recycling, Recovery, Reuse. Promotes conservation, no citizen opposition, requires industry cooperation and accountability.

Hazardous Waste is Everybody's Problem - Get Involved

If you are opposed to the construction of a contaminated soil incinerator in Schuylkill County, please write or call:

Senator James J. Rhoades
416 West Market Street
Pottsville PA 17901
717/628-4782

Congressman Gus Yatron
Meridian Bank Building
Pottsville PA 17901
717/622-4212

Rep. Bob Allen
11 Westwood Center
Pottsville PA 17901
717/622-6629

Rep. Dave Argall
237 W. Broad Street
Tamaqua PA 18252
717/668-1240

Rep. Edward J. Lucyk
38 E. Centre Street
Mahanoy City PA 17948
717/773-3075

DER Waste Management
William McDonnell
90 East Union Street
Wilkes-Barre PA 18701
717/826-2516

Commissioners Sheers,
Shollenberger, Higgins
Schuylkill County Courthouse
Pottsville PA 17901
717/622-5570

Edward M. Silverman, President
Clean Waste Control, Inc.
849 Harrison Avenue
Kearny NJ 07032
201/997-9500

They have no way of knowing how we feel unless we write or call.

CITIZENS AGAINST INCINERATION
P. O. Box 372
Pottsville PA 17901

Make sure you register and VOTE!

If you need a voter's registration form, call the Voter Registration Office
717/622-5570

Should soil burners be permitted in Schuylkill County? Vote NO

EMERGENCY ACTION ALERT

Wildlife Information Center, Inc.
629 Green St.
Allentown, Pa. 18102
(215) 434-1637

February 1992

BAN A HYDROCARBON-CONTAMINATED SOIL-BURING INCINERATOR IN EAST PENN TOWNSHIP, CARBON COUNTY, ADJACENT TO BAKE OVEN KNOB, PA.

Background

Supervisors of East Penn Township, Carbon County, Pa., have approved a permit for construction of a building and related facilities (hydrocarbon-contaminated soil incinerator) at the base of the Kittatinny Ridge below Bake Oven Knob -- an internationally important hawk migration observatory and research area at which the Wildlife Information Center, Inc., conducts major autumn hawk migration studies.

Any environmental threats to Bake Oven Knob, or areas around it, such as incineration of gasoline-and-oil-contaminated soil, are of significant concern to wildlife conservationists. Particular concerns regarding the proposed incinerator include:

- An incinerator constructed at the base of Bake Oven Knob, one of the world's major hawk migration observatories and study sites, within the vitally important Kittatinny Raptor Migration Corridor, is alarming. During autumn (August to early December), thousands of migratory birds of prey, including small numbers of endangered Bald Eagles and Peregrine Falcons, are observed there.

- More than 30 continuous years of hawk migration counts, and other bird migration studies, have been conducted atop Bake Oven Knob. These studies receive international distribution in scientific papers, books, and other sources. Pioneering raptor protection and public education techniques also were developed at Bake Oven Knob. To date, 172 bird, 13 mammal, and 6 reptile species are known to occur at that site during autumn.

- Migratory raptors also use the adjacent Kittatinny Raptor Migration Corridor as a stopping, resting, feeding, and sleeping area as they migrate from North American breeding grounds to wintering grounds in the southern United States, West Indies, and Central and South America. Red-tailed Hawks, Merlins, and American Kestrels have been observed during autumn using tree near the edge of the proposed incinerator site (sand quarry) as hunting and resting perches. These areas, and their raptor prey bases, must be kept free from contamination from incinerator ash or stack emissions.

- Resident raptors including Broad-winged Hawks, American Kestrels, Great Horned Owls, and Eastern Screech Owls nest on the Kittatinny Ridge or in the Kittatinny Raptor Migration Corridor.

◆ The proposed incinerator would turn the north side of the Kittatinny Ridge and Raptor Corridor into an "incinerator alley." One incinerator already exists a few miles upridge at Bowmanstown, Pa.

◆ The Kittatinny Ridge around Bake Oven Knob already is stressed and slightly contaminated with heavy metals (cadmium, lead, and zinc) that drifted downridge from the EPA Superfund toxic contamination site at Palmerton, Pa. Contamination from incinerator emissions and ash would further stress the environment in the Bake Oven Knob area.

◆ The Bake Oven Knob section of the Kittatinny Ridge is extremely stressed and almost totally defoliated every 10-to-12 years from major Gypsy Moth infestations. Any further stress and degradation to the mountain is totally unacceptable.

◆ Stack emissions and ash from the incinerator could have serious, long term effects on trees and other forest vegetation on the Kittatinny Ridge. Would this result in the denuding of mountain vegetation in a manner similar to the Superfund area around Lehigh Gap and Palmerton?

◆ The proposed incinerator's construction site is within the forward "viewscape" of Bake Oven Knob. Any degradation of this "viewscape" is aesthetically and environmentally unacceptable.

◆ Any exposure of environmentally sensitive raptors, <u>including endangered Bald Eagles and Peregrine Falcons</u>, or species in raptor food chains and webs, to incinerator stack emissions and/or airborne toxic ash is an unacceptable wildlife hazard. At Bake Oven Knob, it would place additional biological and environmental stress on birds during a critically important and dangerous period in their annual cycle. Mammals and reptiles using the area as permanent home sites also would be stressed. In short, the area's rich wildlife assemblage could be at risk from the proposed incinerator.

◆ The proposed incinerator would cause further unacceptable degradation of vital raptor and other wildlife habitat within the Kittatinny Raptor Migration Corridor. Logging, expanded quarrying, and building construction already are reducing important wildlife habitat in the Corridor.

◆ The proposed incinerator site is in very close proximity to Lizard Creek, a small water course near the Kittatinny Ridge. Toxic waste almost certainly would contaminate the creek and its aquatic life.

◆ Two stacks associated with the proposed incinerator could pose potentially lethal air strike hazards to birds migrating along the north side of the Kittatinny Ridge.

◆ Because of prevailing autumn winds, emissions from the proposed incinerator could pose a direct health hazard to researchers, recreational hawk watchers, school students on field trips, hikers, and thousands of other visitors to Bake Oven Knob which directly overlooks the incinerator site. Direct human exposure to an incinerator's emissions plumes is totally unacceptable.

◆ The proposed incinerator will have seriously undesirable effects on other outdoor recreational activities in East Penn Township, and the entire Bake Oven Knob area, via potentially contaminating air, soil, and water with toxic chemicals. The federally protected Appalachian Trail, which crosses Bake Oven Knob, and on which hundreds of hikers walk throughout the year, could be affected by toxic air pollution. Use of area camp grounds also could be affected.

The position of the Wildlife Information Center, Inc., is that any incinerator built or operated in the vicinity of Bake Oven Knob, or elsewhere in the Kittatinny Raptor Migration Corridor, is a serious environmental threat to raptors, other wildlife, and people. The Center strongly opposes any incinerator facilities — including the one proposed for East Penn Township, Carbon County, Pa.

VOL. CCXV — NO. 31 POTTSVILLE, PA. TUESDAY, JUNE 4, 1991

Delano rejects dirt plant

Ray Slocum/The REPUBLICAN

Delano Supervisor John Leaswitch, angered over public opposition to a dirt-treatment plant, tells a packed house in Trenton Monday that taxes will go up.

'Opportunity of lifetime' halted at heated session

By Anne Karolyi
The REPUBLICAN

TRENTON — Delano Township supervisor chairman John R. Leaswitch slapped a paper grocery bag on the table in front of him.

Inside were 160 questionnaires which asked township residents if they were for or against a New Jersey's company proposal for a contaminated-soil treatment plant in Mahanoy Area Joint Industrial Corp park.

The $3 million plant would provide 71 local jobs and bring an estimated $4.5 million a year in the county's economy. The treated soil would be used to fill abandoned stripping pits.

"The deciding factor on Clean Waste Control is right here," Leaswitch said. 'We're going to open them and that's it, but I tell you, we're giving you the opportunity of a lifetime.'

One half-hour later, with heavy applause and a few cheers, that "opportunity of a lifetime" had been spurned in 116 of the questionnaires which said health and safety was more important than economics. Only 41 questionnaires supported the plant.

Three responses were thrown out because of unclear answers; 60 of the original 220 questionnaires were not returned.

"That's the decision, right then and there," Leaswitch said, when the numbers were tallied. "It's done, it's forgotten and everything else."

"We had the opportunity of a lifetime for somebody to pay our bills,

(Please turn to page 6)

Delano board rejects 71-job dirt processor

(Continued from page 1)

and now we're going to raise your taxes," he said.

About 85 people came to hear the fate of Clean Waste Control's proposal Monday night, packing the Trenton Social Club and spilling out into the hallways and onto the porch where they listened through open windows.

Had the supervisor's voted with their opinions rather than the public's, the plant would have been welcomed. Leaswitch and supervisor Jay Ryan support the facility; supervisor Michael Marinchak is against it.

At the meeting's start, some people protested the use of the questionnaires, which were stuck in township doorways, one to a family, without providing a chance for every resident to record their opinion.

But as the responses were read, one by one, many in the crowd smiled wider and wider as the nays piled up.

Most of the opposition revolved around health concerns of the treatment process: "Pure water is too valuable too give up." "Think of the children. You are only looking at the dollars and not the public health." "Let them put it in their backyard if it is safe."

Responses supporting the plant considered the facility's economic impact and the chance of filling stripping pits with treated soil: "People complain there's no work but when somebody wants to move in everbody's against it." "This area needs jobs and a good tax base. I'm in favor of any plant coming into the area." "We would be crazy to say no. I've lived in Delano all my life and I've never seen anybody offer to fill those stripping pits."

The proposal's rejection is the company's second this year, having had a permit granted and then revoked for a similar, smaller facility in Hazle Township, Luzerne County. Attorney Ronald T. Derenzo, representing Clean Waste, attended the meeting "just to see what happened."

"Now I will have to tell the unfortunate news to my clients," he said.

Rejecting the plant will mean a jump in taxes, Leaswitch said to the crowd after the tally was taken.

"And after I propose a tax increase, I will resign. That's how I feel about you people," he said.

The company would have paid a "host fee" of 25 cents for every ton accepted, and township taxes from the facility were estimated at $37,000 annually.

"They're stupid. Somebody else was going to pay our bills," Leaswitch said after the meeting. "If you heat your house with oil, stop heating your house; if you drive a car, stop driving, because it's the same kind of contamination as this plant."

The plant would heat soil contaminated with petroleum-based products, burning off the waste gas and oil. Company officials said each load of dirt would be tested before and after treatment for potential hazards, and emissions would be continuously monitored from the plant's stack.

Taxes for the township will probably double without the plant, Marinchak said, adding that he opposed the facility because he did not feel he had enough information to be sure the process was safe.

The tax rate has been steady for six years, and the township is planning to building municipal offices next year and is facing other costs.

"And I knew it wasn't going to go, if you put it up for a vote," he said.

The loss of jobs will keep the area depressed and losing its youth, said John Cornchock of Delano, the only resident to speak for the plant at the meeting.

"Here's an opportunity to bring some work into the place and they say no," he said. "The kids are graduating from high school, from college and they don't come back."

"If you get the reputation of rejecting all the industries, the industry isn't even going to try anymore," he said.

HOUSE REPUBLICAN COMMITTEE TASK FORCE

ON THE ENVIRONMENT

Pottsvill City Hall Chambers

January 23, 1992

Testimony of Alfred A. Siess, Jr.

My name is Alfred A. Siess, Jr. I am a paid technical consultant representing municipalities and citizens' groups opposed to the three projects which are the subject of today's hearing. My testimony is on behalf of Citizens for a Healthy Environment; Hegins Township; Citizens Against Incinerators and Saint Clair Borough, and in opposition to the facilities proposed by respectively, Walport Corporation, Schuylkill Environmental Company,Inc. and Clean Waste Control, Inc. As such I would like to provide both general and specific comment pertaining to all three proposals.

GENERAL COMMENT

The facilities under discussion include two low-temperature thermal treatment units for the treatment of petroleum-contaminated soils and one medical waste incinerator. These three proposals have a number of things in common:

1. Technically each is an incinerator with the handicaps of incomplete combustion and the proclivity to synthesize hazardous compounds and release these to the environment.
2. Each is a hazardous waste incinerator as strictly defined by Pennsylvania's "Solid Waste Management Act", (Act 97 of July 7, 1980) and subsequent statutes;
3. Each represents a well-documented and very serious threat to public health and the environment.

There is one other thing that each of the project proponents has in common....They would have this committee and the public believe that none of the above is true; that their proposals pose absolutely no health or environmental consequences, and that they are performing a public service by bringing these facilities to Schuylkill County.

Clean Waste Control has stated the process "...is environmentally safe, and meets all local, state and federal regulations.", "Once treated,...the contaminated soil will emerge as clean soil that is perfectly safe for mine reclamation and reforestation programs." and, "The plant will not emit toxic substances into the air or contaminate our water system...". At a public meeting in Delano a company "engineer" made the astounding claim that the plant would emit absolutely NO harmful products of incomplete combustion. At Hazle Township in Luzerne County, another engineering firm representing the company told us that we should be pleased to have them put lead-contaminated soil into the unlined stripping pits because the soil there is already contaminated with lead.

Walport has made similar unsubstantiated claims with respect to burning contaminated soils in an asphalt plant. Walport would have us believe that they can adequately test for hazardous wastes by testing a 4-ounce sample from the surface of a 500 ton pile of contaminated soil. Apparently they now intend to also treat material contaminated with waste oils which are known to contain extremely hazardous elements such as chromium and lead.

General comment, cont.

Schuylkill Environmental claims that they can do what has never been done before, i.e.: burn infectious hospital waste, including plastics and paper, without emitting toxic pollutants such as cadmium or dioxin. Their Community Relations Officer, Mr. Angst, recently circulated a flyer claiming that what comes out of the stacks is "harmless", that "state and federal emission standards are unbelievably strict", and about water pollution, "There won't be any". Mr. Angst would have us believe that DER will provide strict control of emissions by sitting "at a desk in Harrisburg or Wilkes-Barre."

I would like to offer a challenge to each of these companies, "Put your money where your mouth is." If you really believe your own rhetoric, how about backing it up with some hard data? I have reviewed both Walport's and Clean Waste's applications and have found them to be incomplete and without technical justification of their claims. If you want DER to conduct a responsible review of your applications, provide the responsible data which are needed to perform a complete review. Reveal your company's past compliance records completely, provide complete equipment design information, tell us how much water will be consumed, provide competent engineering analysis of site geological conditions, traffic and social impacts, potential for damage to private and public water supplies, specific sources of contaminated soil, realistic plans for testing and operating including emergency and contingency plans, realistic employment figures and all of the other information which is not adequately covered. Schuylkill Environment could show good faith by providing the citizens and host communities with copies of your application and a list of all of your investors.

SPECIFIC COMMENT

THERMAL TREATMENT OF CONTAMINATED SOILS

As proposed for treatment of petroleum-contaminated soils, thermal treatment is a two-stage process. In the first stage the contaminated soil is heated in a closed chamber (kiln, primary thermal processor, etc.) to remove water and volatile organics from the soil. The volatile organics and water are vaporized in the primary unit. Exhaust gases are vented to a secondary combustion chamber (afterburner, thermal oxidizer, etc.) where most of the volatiles are burned (incinerated). Proponents of thermal treatment who do not like the process to be called "incineration" overlook the fact that the secondary burn, where the toxic wastes are supposed to be completely combusted, is exactly that. It is just as correct to label this process "hazardous waste incineration" as it is to call it something else based on what happens in the primary chamber.

LIMITATIONS OF THERMAL TREATMENT TECHNOLOGY

Thermal treatment technology is generally recognized as a viable alternative means of remediating volatile, hazardous wastes of the type associated with leaking petroleum tanks. However, to safely employ this technology one must understand its limitations.

Limitation of thermal treatment technology, cont.

There are actually two distinct technologies employed in thermal treatment; low temperature and high temperature treatment. Each is severely limited to very narrow and spcific applications where the identity of the contaminants is known with certainty or can be determined on site. It is necessary to carefully identify the contaminants to be treated before choosing the type of thermal treatment to be employed, because the two methods differ in effect and safety for different chemicals treated. For example, the low temperature system proposed is viable for treating certain volatiles such as some of the organic constituents found in virgin petroleum products, but it is the wrong choice completely for contaminants such as PCB's which are not destroyed and can recombine at the temperatures employed here as highly toxic dioxins. This is one reason why thermal treatment has traditionally been limited to situations using portable equipment. (Even in the case of a site-specific clean-up thermal treatment may not be the best or most cost effective alternative.)

Neither low nor high temperature thermal treatment can destroy heavy metals such as lead, mercury or cadmium. Depending on the temperatures employed and the metals involved, the metals are either volatilized, in which case they are captured by pollution control equipment, or are released to the environment as stack emissions, or, if not volitalized, the metals wind up in the soil or are released as fugitive emissions. In every case the metals remain hazardous and a potential or actual source of water pollution, air pollution, or direct inhalation.

The fact that toxic heavy metals occur naturally in soils is another good reason to avoid centralized thermal treatment such as proposed here. When huge quantities of soil are heated or incinerated over time, even minute concentrations of toxics such as lead and cadmium will build up over time to become exceedingly serious threats to public health. A good nearby example is the severe lead and cadmium contamination of the hills surrounding the former zinc smelter in Palmerton, PA. which is now the object of a "superfund" clean-up effort.

Still another reason why on site treatment is superior to central treatment is the avoidance of energy consumption, pollution and costs associated with the transportation of the soils from the site to the treatment facility.

Another cause for real concern with central treatment is the lack of control of the incoming waste stream. Despite all of their claims to the contrary, none of these applicants has demonstrated a feasible means of insuring that chemicals inappropriate to their treatment method, such as PCB's, can be kept out of the waste stream.

HAZARDOUS NATURE OF PETROLEUM PRODUCTS

PENNSYLVANIA'S "SOLID WASTE MANAGEMENT ACT" P.L. 380, No. 97 of July 7, 1980. The act clearly defines "hazardous Waste" as "...Any garbage, refuse, sludge...material...which because of its quantity, concentration, or physical,chemical, or infectious characteristics may:

1) cause or significantly contribute to an incrase in mortality or an increase in morbidity in either an individual or the total population; or
2) pose a substantial present or potential haxard to human health or the environment when improperly treated, stored, transported, disposed of or otherwise managed."

Specific exemptions are listed. Petroleum-contaminated soils are not included in the exemptions, which are given not because the exempted materials are non-hazardous, but because they are covered by other statutes.

"Residual waste" is defined in Act 97 as coming from the same sources '...provided that it is not hazardous..." Clearly a hazardous waste as defined in the act cannot properly be classified as a "residual waste".

MEDICAL WASTE INCINERATION

It is obvious from the public relations materials that Schuylkill Environmental has circulated that they are very close to the regulatory process. In fact, it appears likely that the investors in this project may be in a position to influence the regulatory process. The problem here is that the proponents seem unwilling to recognize that the regulations are the product of intense industry lobbying (politics instead of rational science) and are flawed in several key respects.

While the regs recognize that infectious and chemotherapeutic wastes "are best managed at the place of generation with a minimum of transportation through the Commonwealth...", they are clearly defective in not recognizing the serious problem inherent in incineration.

In general, and with incineration of mixed hospital wastes in particular, neither landfills, nor incinerators can safely handle hazardous wastes such as heavy metals, toxic compounds and volatile organics. Landfilling is unsafe because we simply are not able to design one that doesn't leak. Incinerators compound the problem in several ways:

1) They do not eliminate landfills because there is the need to dispose of the (usually toxic) ash.

2) As noted before, there is no such things as complete combustion in any incineration process. The PIC's (Products of Incomplete Combustion) are often far more dangerous than the materials being incinerated. (i.e. Dioxins and Furans are created in the combustion process from materials such as plastics and paper.)

3) Materials that escape through the stack or remain in the ash are broken down into fine particles which become more readily "available" to the environment. (Stack emissions can be readily absorbed into the blood stream, for example.)

The 21 scientists who met at Racine, Wisconsin in July, 1991 have stated with certainty, "Many compounds introduced into the environment by human activity are capable of disrupting the endocrine system of animals, including fish, wildlife, and humans." Chemicals indicted by these international medical experts include "certain PCB cogeners (forms), dioxins, furans, cadmium, lead and mercury, and laboratory animal products"(1), precisely the chemicals of concern in either or both medical waste or contaminated soil incinerators.

Since 1984 there has been compelling new evidence showing a significant association between dioxin exposure and a long list of serious health effects.(2) These extensively documented studies expose as completely fallacious the claims of incinerator proponents that there is not adequate proof of chronic health effects from exposure to dioxins. (Even the most die-hard incinerator proponents have long acknowledged that all competently-tested incinerators worldwide emit unsafe levels of dioxins and furans. They just refused to accept the evidence of serious health effects.)

WHAT MUST BE DONE

If we required all existing and new thermal treatment or incineration facilities of every type to prove beyond a reasonable doubt that they are both needed and safe we would solve the problem because safer and more economical alternatives exist for all waste incineration processes, and, simply put, NO INCINERATORS OF ANY TYPE WOULD BE BUILT!

I am furnishing a "Discussion Draft" of a proposed medical waste amendment to the federal "Solid Waste Disposal Act" as an example of the type of legislation that must be enacted if we are serious about solving our national waste, energy, environmental and economic problems.

---

(1) "Statement from the work session..." provided

(2) "Affidavit of Admiral Elmo R. Zumwalt, Jr." provided

WARNING

Chemicals known to the State to cause cancer, birth defects, or other reproductive harm are found in gasoline, crude oil, and many other petroleum products and their vapors, or result from their use. Read and follow label directions and use care when handling or using all petroleum products.

Chemicals known to the State to cause cancer, birth defects, or other reproductive harm are found in and around gasoline stations, refineries, chemical plants, and other facilities that produce, handle, transport, store, or sell crude oil and petroleum and chemical products.

Other facilities covered by this warning include, for example, oil and gas wells, oil and gas treating plants, petroleum and chemical storage tanks, pipeline systems, marine vessels and barges, tank trucks and tank cars, loading and unloading facilities, and refueling facilities.

The foregoing warning is provided pursuant to Proposition 65. This law requires the Governor of California to publish a list of chemicals "known to the State to cause cancer or reproductive toxicity." This list is compiled in accordance with a procedure established by the Proposition, and can be obtained from the California Health and Welfare Agency. Proposition 65 requires that a clear and reasonable warning be given to persons exposed to the listed chemicals in certain situations.

Ashland Oil, Incorporated
1-800-523-3157

Atlantic Oil Company
1-800-523-3157

ARCO
Atlantic Richfield Company
1-800-523-3157

BP America, Inc.
1-800-523-3157

CHEVRON CORPORATION
and its subsidiaries
1-800-457-2022

CONOCO INC.
its subsidiaries and affiliates
1-800-523-3157

Exxon Company, U.S.A.
a division of Exxon Corporation,
and affiliated companies
1-800-523-3157

Fletcher Oil and Refining Company
1-800-523-3157

Golden West Refining Company
1-800-523-3157

Marathon Oil Company
1-800-523-3157

Mobil Oil Corporation,
its affiliates and subsidiaries
1-800-523-3157

Pacific Refining Company
1-800-523-3157

Phillips Petroleum Company
1-800-523-3157

Santa Fe Energy Resources, Inc.
1-800-523-3157

Santa Fe Energy
Operating Partners, L.P.
1-800-523-3157

Shell Oil Company
and its subsidiaries
1-800-523-3157

Texaco USA
1-800-523-3157

Thrifty Oil Company
1-800-523-3157

Time Oil Co.
1-800-523-3157

Tosco Refining Company
1-800-523-3157

Ultramar Inc.
1-800-523-3157

Union Pacific
Resources Company
1-800-523-3157

UNOCAL Corporation
1-800-523-3157

U.S. Oil & Refining Co.
1-800-523-3157

Western Fuel Oil Company
1-800-523-3157

PROGRESS

rwensville, Philipsburg, Moshannon Valley, Pa., Tuesday, April 24, 1990 18,856 Copies Daily 30 Cents

Residents Protest Against Proposed Incinerator in Bradford Township

By Marian [illegible]
Staff Writer

Saying Clearfield County has seen enough air and water pollution, citizens and officials from several municipalities yesterday protested a contaminated soil incinerator proposed to burn 300,0000 tons annually in Bradford Township.

See photo on page 13

About 14 persons attended a meeting on the proposal by Clean Earth of Bigler at the Clearfield County Courthouse, which was not planned as a public meeting, and came away unassured by company officials, who said they would be providing an environmental service by cleaning the contaminated earth by incineration.

Officials of Bradford and Graham townships, Wallaceton Borough and Wallaceton Municipal Authority were among those with many questions and concerns.

Citizens brought along picket signs they carried outside the courthouse, which read: "All We Need is the Air We Breath," "Say No to Incinerators, Super Landfills in the Sky," and "Our Kids Deserve Clean Air."

One protester was dressed as the Grim Reaper and another wore a gas mask.

Commissioner Bill Wise said the commissioners routinely receive requests for informational meetings. He said after being contacted by the news media, it was decided to open this meeting with Clean Earth of Bigler, but of the commissioners only Mr. Wise was able to attend.

Bradford Township Supervisors Seth Cowder came with a list of questions.

He noted the permit application states the incinerator would not be limited to the items listed, that is various types of pet-

Turn to Page 6, Col. 3

—(From Page 1)—

troleum-contaminated dirt, and asked if it could also be used to burn garbage.

Mr. Cowder said the proposed site is underlain with an aquifer and he expressed concern about nearby wetlands. He pointed out 65 violations and a permit revocation listed in the compliance history of affiliated companies, noting the figure does not inspire trust.

Bonnie Hansell, a member of Wallaceton Borough Council, pointed out the incinerator would be about one-half mile from the borough water source and said the borough and water authority oppose the proposal. "This is right in our backyard."

A citizen who lives near the IA Construction asphalt plant, where the incinerator is planned, asked what the company plans to do to clean up the current operations, noting his porch is covered with white dust and "it would take you six months to clean up your own spills."

Clean Earth of Bigler is a joint venture of IA Construction and Stout Environmental Service Co., Thorofare, N.J.

Another citizen asked how Clean Earth could possibly check through 60 incoming trucks a day to determine the contents were materials allowed, and citizens said the actions of garbage companies have inspired distrust: "BFI burned us."

The Concerned Citizens of Graham Township pledged to assist in the fight to stop the incinerator "because we all breath the same air."

Group President Pam Emigh, after the meeting, said fine particulate air pollution from the incinerator could reach all county residents.

Particulate pollution, even while meeting government emission standards, can penetrate deep into lungs and has been shown in some studies to cause increased respiratory diseases such as bronchitis and asthma in children, she said.

Citizens were upset that the public was not informed of the proposal until a news article. Mrs. Emigh said companies come in and convince officials and the last to know are the people who will live near the facilities.

"I hope our commissioners will not swallow the sugar-coated pill," Sylvia Bunzer of CCGT said.

Graham Township Supervisor Mafred Rinehart said Clearfield County is being selected for trash and incinerators because of low-income and Interstate 80.

"Yesterday was Earth Day, what a way to start off Monday," she said.

Henri J. Molleron, vice president of IA Construction, asked if he would live next to the incinerator, said he lives in Philadelphia.

He and Michael Goebner, director of business development for Stout Environmental, fielded questions for over two hours.

They could not say exactly where the contaminated soil would come from, it depends on market forces, but they said there is lots of it in Pennsylvania.

"Ninety-five percent will come from underground storage tanks," Mr. Molleron said.

They said hydrocarbons emitted by petroleum can get into the air from contaminated sites but by incinerating it, the company is helping clean up.

Hydrocarbons such as benzene, methane and butane come from incomplete combustion of fossil fuels and are converted into photochemical smog by sunlight.

Company officials declined to make available a copy of an air pollution permit, saying they did not know if they were permitted to do so by the state Department of Environmental Resources to which they referred the requests.

They said the emission stack will be 34.75 feet high. The proposed site is at an elevation of 1,740 feet.

The company officials said the incinerator will use the best available technology and DER was impressed with the technology.

They asked that the public keep an open mind and said the meeting with county officials was arranged to lend guidance in reviewing the application.

The contaminated soil falls within the residual waste classification, which covers many types of waste varying in potential for damage to public health and the environment, according to DER.

The DER is proposing new regulations for residual waste and while the Clean Earth application was for solid waste, the company officials said it was prepared with the new regulations in mind.

They said they know of no requirements for host municipality fees.

The Clean Earth officials estimated the incinerator would be on line three to six months after a permit is approved and would have 10 employees.

Currently, there is a 60-day comment period for the solid waste application and 30 days for the air pollution permit.

Gerald Duke, Clearfield County Planning Commission executive director, who set up yesterday's meeting, said comments need to be specific and DER will make the final decision.

State orders closing of tainted-soil plant

Owner says facility will remain open

By Karen Jolly Davis Sept 4, 82
Correspondent VA PILOT

EASTVILLE — A contaminated-soil treatment plant that has caused a months-long uproar on the Eastern Shore has been ordered closed by the state Department of Waste Management.

State officials have told Billy Moore, the owner of the plant in Nassawadox, to clean up the site, but Moore said he intends to keep operating for at least another 18 to 20 months to fulfill his contracts.

Moore's defiance leaves open the question of whether state and county officials will, or can, enforce the law.

The plant burns off petroleum by-products from contaminated soil. The soil is usually tainted by spills and leaks from tanks and pipes.

Moore has been running the plant for nearly two years without a permit, asserting he is exempt from state solid waste laws because he is "recycling" the dirt. Two months ago, Northampton's Board of Supervisors ordered him to "cease and desist" in 90 days because the plant violates county zoning laws.

Last week, the waste management department's top enforcement official, John Ely, again demanded that the plant shut down.

Moore, however, maintains that he is doing nothing wrong.

"What we're doing, we're doing the way we're supposed to," he said Wednesday. "We'll keep on going."

Moore spoke before the Northampton County Planning Commission at a public hearing for his request to rezone 6 acres near the plant to expand his business.

Although he said he needed the land to store rock for his asphalt business, Moore admitted at the hearing that he had lost his certification as a state-approved asphalt producer. The commission voted 7-3 to deny the zoning change and asked Moore how he could continue to operate the thermal treatment facility in the face of two cease-and-desist orders.

"That's what the courts will have to decide," he answered.

A protracted court battle could seriously burden a county already struggling financially with the loss of businesses and jobs.

At the public hearing, local landowner Barbara Custis gave voice to a common fear.

"Who in the county will regulate and enforce orders that are ignored?" she asked.

Stuart Ridout, spokesman for the Department of Waste Management, declined to comment on the state's options or what penalties Moore might face if he refuses to close.

VIEWPOINT

Situation causes CBES concern

To the editor:

There appears to be some question about the position that CBES (Citizens for a Better Eastern Shore) has taken with respect to the treatment of contaminated soils in Northampton County. I'm writing to clarify our position.

From our perspective, there are now two principal issues. One relates to a very sensitive public policy matter: that of the county's review and decision process that permitted the granting of a zoning clearance for a facility to treat contaminated soil. The other issue focuses on public health and groundwater concerns related to the testing, transporting, treating, and residue disposal of the contaminated soil being trucked into the Moore facility.

While individual members have expressed deep concern over the possible impacts to public health and groundwater from the importation, storage and treatment of contaminated material, the CBES organization has concentrated on the review and decision process and the application of the county's adopted policies.

A zoning office review that excluded the planning commission and the public from a precedent-setting proposal of significant import to the entire community is indeed unfortunate. In our opinion, the very limited review of the Moore proposal and subsequent decision was a serious error in judgement.

The disregard of the intent and the direction provided by the comprehensive plan regarding the importation of solid wastes was a contributing factor to a decision that has aroused the ire of many residents. The county's Comprehensive Plan, approved by the board of supervisors in 1990, addresses the subject of solid waste. One objective is worded as follows: "Prevent the disposal of other than local solid wastes/hazardous materials in Northampton County." A corresponding strategy reads, "Create an ordinance prohibiting the importation of out-of-state solid waste/hazardous materials for disposal in the county."

In our opinion, the intent of the objective and strategy is clear. We have not yet been able to determine why the thrust of these statements did not apply in the decision on the Moore facility. Since its inception, CBES has been an advocate for a meaningful Comprehensive Plan and for adhering to the intent and guidance provided by the plan. When officials ignore or disregard the plan, the public trust in county government erodes.

If the county's current position on solid waste/hazardous materials as stated in the Comprehensive Plan is considered inappropriate, outdated or needing modification, there is a proscribed procedure for amending the plan. To our knowledge, no such amendment has been proposed.

In the Northampton Zoning Ordinance, under the section titled Industrial General Zoning District, there is a lengthy list of permissible uses. An asphalt or bituminous mixing plant is one of the permissible uses. Treating contaminated soil is not listed as a permissible use. However, "accessory uses and structures incidental" is a permissible use and was the justification for granting zoning clearance to the asphalt plant to treat contaminated soil. We thought this was a questionable judgment. As reported in the Eastern Shore News, attorney Bruce Jones characterized the current use of the Nassawadox facility as clearly and unequivocally violating the zoning ordinance. We assume the supervisors are seeking legal advice as to their options, and we, like everyone else, are waiting to see what action they will take.

Our organization has concluded that a county review and decision process that permits the exclusion of the planning commission from having input into what surely must be characterized as an extremely sensitive public policy issue is flawed. We have therefore written to the county administrator and the board of supervisors suggesting they take prompt and appropriate action to modify the process to prevent a recurrence of the type of limited review that took place with the Moore proposal.

It would be premature for CBES to take a position on the proposed PEMSCO/Transcon facility. We encouraged our membership to attend the briefing on bio-remediation that took place April 20. CBES has not had the opportunity to review the PEMSCO/Transcon proposal that was submitted to the county. We assume the proposal will be in the form of an amendment to the zoning ordinance permitting bio-remediation facilities in the Industrial General Zoning District. This means the planning commission might again have to grapple with a possible conflict between the proposed zoning amendment and the current guidance in the comprehensive plan.

I trust these remarks will provide a perspective on where we have concentrated our efforts and the conclusions we have reached thus far.

Suzanne Wescoat
President, CBES

Disagrees with editorial

To the editor:

Let's do our homework. While your reporting on the dirt remediation plant has been excellent, your editorial is full of erroneous conclusions. 1. The soil is being disposed of here. 2. Mr. Moore did not jump through "all the hoops." 3. There is a danger to the Eastern Shore from importing contaminated soil.

1. The soil is being brought here in 20-ton dump trucks from Maryland, New Jersey, Pennsylvania and, perhaps, other states. The soil, after being "processed," is being piled in the borrow pit area behind the asphalt plant off Route 600. There are 25-foot walls of dirt surrounding the perimeter of Mr. Moore's property and the first borrow pit has been filled. There is another pit now closer to Route 600. The material is being "processed" and disposed of in the county, disposed of here as waste. By Mr. Moore's own admission, his plant has been "down" for several weeks, but the trucks continue to roll in, and the dirt walls in the borrow pit area continue to grow. I invite the editor to come see the pit area.

2. Your next erroneous statement is that Mr. Moore "jumped through all the hoops." He, in fact, short-cutted the county with a nod from Zoning Administrator John Humphrey. His permit was granted without approval of, or knowledge of, adjacent land owners, the zoning/planning commission, or the local board of supervisors. There were no open hearings. This is a completely separate operation from the original asphalt plant permit. It is illegal as it is not a permitted use under the zoning ordinances.

3. There is a potential danger for our county. Our drinking water needs to be guarded against the possibility of contamination. There are no labs nor testing facilities in this county to safeguard against an accident. One bad load could spell disaster and we have no regulations nor enforcement capabilities in place to safeguard people or property.

Here are some questions that you could research and answer.

1. If this stuff is so harmless, why isn't it "recycled" in the state where it originated?

2. Whose dirt was it and who paid for its treatment?

3. How long does it take to "process" a 20-ton truckload of dirt and where is that "processed" dirt then stored?

4. Why has Northampton County been fortunate enough to become the dirt recycling plant for all these states?

5. What's the next material that Mr. Moore will want to recycle?

6. Who regulates and inspects this plant in a county ignorant of its very existence?

Asking for controls on a man's property goes against my grain. A land owner should be able to do as he pleases on his own land — as long as it does not harm his neighbor's property or life. As adjacent landowners we did not object to the borrow pit, or the asphalt plant, but we do feel threatened by this operation. There are too many risks and unanswered questions.

Barbara Custis
Nassawadox

Moore plant ordered to stop, charged with SWCB violations

Sept 5, 92

By Susan Machado

The state Department of Waste Management added fuel to the fire roaring over soil remediation in Northampton County this week when it ordered the Gerald M. Moore & Son, Inc. asphalt plant in Nassawadox — where contaminated soil is currently being thermally remediated — to cease and desist its operation.

Although facility owner Billy Moore was informed by the DWM in February 1992 that thermal treatment of petroleum-contaminated soils requires a permit from the department, Moore has not applied for one. At that time, the DWM explored the possibility that Moore's facility might be exempt from solid waste regulation if it were classified as a recycling operation.

Recyclables, or speculatively accumulated material, are defined by the DWM as "any material that is accumulated before being recycled or in anticipation of potential recycling. A solid waste is not being accumulated speculatively when it is recyclable, has a feasible means of recycling available and 75 percent of the solid waste accumulated is being removed from the site annually."

According to the DWM, in order for Moore's facility to meet these requirements — and be exempt from permit regulations — the petroleum-contaminated soils being accepted by the facility must be used as an ingredient within a continuously operating asphalt batch processing system. The department considered the "shutdown" of Moore's asphalt production to incinerate stockpiled petroleum-laden soils noncompliant with the exemption requirements.

For these reasons, DWM Environmental Program Supervisor for Compliance and Enforcement Gerould J. McCoy advised Moore in February to discontinue soil remediation until DWM approval had been obtained.

Nearly eight months later, in a letter dated Aug. 28, DWM Compliance and Enforcement Director John Ely listed the following reasons why Moore's facility is not exempt from permit requirements:

—contaminated soils are stored on an asphalt pad on the ground and are not necessarily incorporated into a product;

—the proposal to sell treated soils as cover soil for a landfill is inconsistent with permit exemptions;

—the soils are being reclaimed rather than used or reused directly.

"In addition," Ely wrote, "this office has reservations about whether the contaminated soil is effective as an ingredient in the [asphalt] process."

Ely ordered the operation to cease immediately and all wastes disposed on site to be identified and removed to an appropriately permitted facility.

Moore is asked to respond within 15 days to the DWM's order to quit operation.

In addition, Moore was issued a notice of violation on two counts from the State Water Control Board this week for failure to submit a complete Virginia Pollutant Abatement (VPA) permit application, due July 10, and failure to contain discharge and/or threat of discharge of oil to state waters because piles of contaminated soil were found uncovered during an unannounced SWCB inspection on July 22.

Although Moore was advised by the SWCB in a letter dated June 8 that a VPA permit was required for the soil remediation facility, the board has not yet received an application from Moore.

In addition, SWCB inspector Barbara Brumbaugh conducted an unannounced inspection at the asphalt plant on July 22 and found that 35-40 percent of the more than 50,000 tons of contaminated soils stored at the facility were uncovered. According to Brumbaugh's report, she instructed Moore during two previous inspections to keep all contaminated soils covered at all times.

Finally, Upshur moved to recommend against rezoning, and said, "I feel the expansion of the Industrial General District would compound controversy and not be in the best interest of Northampton County."

Moore is scheduled to appeal before the Northampton County Board of Zoning Appeals the cease and desist order issued to him by the county. The appeal is slated to be heard Wednesday, Sept. 9, at 10:30 a.m. in the Eastville Circuit Courtroom.

THE SUN
Maryland
FRIDAY
JULY 31, 1992

Proposed plant's toxic emissions called dangerous

By Timothy B. Wheeler
Staff Writer

A controversial soil-recycling plant proposed for Rosedale would release dangerous levels of toxic benzene into the air of the eastern Baltimore County community, a Johns Hopkins University scientist said yesterday.

Dr. Marc Donohue, chairman of Hopkins' chemical engineering faculty, said the company seeking to build the plant has seriously underestimated the amount of benzene that would escape into the air from gasoline-contaminated soil the facility would treat.

Benzene, an ingredient of gasoline, can cause cancer if inhaled.

The plant, which could process up to 185 tons of petroleum-tainted soil per hour, is planned by Environmental Recycling Associates.

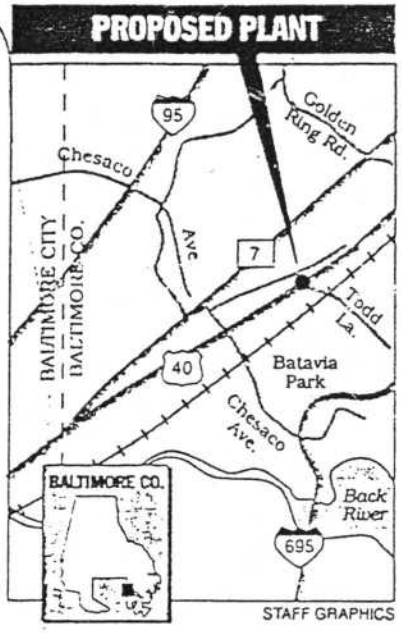
That firm is a subsidiary of Bryn Awel Corp., a Towson pavement manufacturer that wants to use the decontaminated dirt in its asphalt.

If the plant were built as proposed, its benzene emissions would "greatly exceed" federal and state air pollution limits — by up to 10 times, said Dr. Donohue, who was hired to study the project by a group of residents who oppose it.

Dr. Donohue's report was given this week to the Maryland Department of the Environment, which will decide whether to permit the project.

State officials plan to review the study, along with other objections raised by Rosedale residents, said Donald Andrew, chief of new permits.

No decision has been made, but Mr. Andrew noted that his agency previously concluded that the plant would not release unsafe levels of toxic pollutants such as benzene if it were operated properly.



The $5 million plant would clean up and reuse dirt contaminated by gasoline, diesel fuel and oil that has leaked from underground storage tanks.

The plant would remove petroleum residues from the soil by "cooking" it at 500 degrees Fahrenheit, then burn off the evaporated contaminants.

Much petroleum-contaminated dirt is now dumped in landfills or hauled out of state for disposal, but there are six soil reclamation plants operating or proposed in Maryland.

Dr. Donohue said he was surprised by his findings in the case of the Rosedale plant because he believes that the technology employed "can be quite safe."

"But precautions need to be taken, and it doesn't appear that those precautions are being taken," Dr. Donohue added.

He said that the company's projections of benzene emissions were incorrectly calculated and based on "questionable assumptions."

Dr. Donohue urged the state to look into whether the plant would emit dangerous levels of other toxic pollutants, such as lead, mercury and arsenic.

Robert Smith, a lawyer for Environmental Recycling Associates, said yesterday that he had not seen the new study.

He said company officials stand by their own studies, which show the recycling plant would not release unsafe levels of benzene or any other pollutants.

"We think what we've done is reasonable," Mr. Smith said.

"The assumptions we made were superconservative."

Most of the dirt stockpiled so far for treatment by the plant is contaminated with oil, not gasoline, Mr. Smith noted, so it has very little benzene in it.

But Larry Bonkowski, a board member of Southeast Association for the Environment, the comunity group that hired Dr. Donohue, said the study confirmed Rosedale residents' belief that the plant would be unsafe.

About 600 angry residents, including the area's state legislators, turned out last month at a state hearing to oppose the project.

"This would never go in a 'better' neighborhood, let's face it," Mr. Bonkowski said.

Measure offered to classify soil cleaners as incinerators

State Journal 2-9-92

By THE ASSOCIATED PRESS

A bill to give local governments greater control over controversial soil-cleaning plants would bring the state Division for Air Quality "into the 20th century" on the issue, an attorney says.

Tom FitzGerald, the Frankfort-based environmental lawyer who drafted the bill, said officials haven't been treating the soil plants as incinerators, "even though they can't find any difference. ... They are incinerating."

FitzGerald, executive director of the Kentucky Resources Council, said the bill introduced Friday by Rep. Herbie Deskins Jr. would correct that.

The bill would classify the so-called thermal stripping plants, used to treat petroleum-contaminated soil, as commercial waste incinerators. That would allow counties to ban them under their solid-waste management plans.

Such plants have been a special concern for Deskins, D-Pikeville, because two soil-cleaning facilities are proposed for Pike County.

His bill calls for the same public comment process on the plants as is now required before landfills and surface mines are granted permits. It also would allow a state hearing officer to suspend a permit without a court challenge.

"This brings the Division for Air Quality into the 20th century in the way the public is involved in the process," FitzGerald said.

The plants proposed for Pike County would heat the dirt in a rotating drum to evaporate volatile organic compounds, such as benzene. The gases would be filtered to remove particulates from the emissions, and the soil could then be used for fill or other purposes.

State officials have said the process appears to be safe and effective, but a number of Pike County residents have denounced the state's handling of the matter as lax.

Currently, five permit applications are on file in Kentucky for such plants, and two of them have been approved. However, none of the plants is in operation.

Because the plants are not considered "major sources" of toxins, the state does not require public input in the permitting process. FitzGerald said that was "flat-out unfair."

Petroleum-soaked dirt contains some hazardous elements, but the U.S. Environmental Protection Agency has delayed declaring the soil itself hazardous.

The state Natural Resources and Environmental Protection Cabinet is currently reviewing whether thermal stripping should be considered incineration. The review began Tuesday after the state suspended permits granted for one of the Pike County plants.

The cabinet also is checking whether Green Earth Technologies Partners — a partnership between a Canadian company and a Pikeville-based firm — did not make proper disclosures on its permit application. FitzGerald lauded the action but said the legislation was still necessary.

"The agency's review may not provide the relief that the people need," he said.

Two of the permits on file are for mobile soil-treatment units. Deskins' bill would not cover the mobile plants, however.

The measure would amend a 1990 law that overhauled the state's solid-waste statutes.

Bill seeks control of soil-cleaning plants

Associated Press 2/8/92-H

FRANKFORT — An Eastern Kentucky lawmaker introduced a bill yesterday to allow stricter local control of controversial soil-cleaning plants.

The bill by Rep. Herbie Deskins Jr., D-Pikeville, would classify the thermal stripping plants as commercial waste incinerators. That would allow counties to ban the plants under their solid-waste management plans.

Deskins has been concerned about such plants because two are proposed for Pike County.

His bill calls for the same public comment process on soil-cleaning plants that is required for landfills and surface mines. The bill would allow a state hearing officer to suspend a permit without a court challenge.

Permits of Pike soil plant suspended

Associated Press 2/5/92

FRANKFORT, Ky. — The state suspended the construction and operating permits for a controversial Pike County soil-treatment plant yesterday because of possible misrepresentations on the developers' applications, an official said.

In a letter to Green Earth Technologies Partners, Kentucky Environmental Protection Commissioner Bill Eddins said the state also will look into whether the plant should be classified as an incinerator.

The state Natural Resources and Environmental Protection Cabinet announced the suspensions during an administrative hearing on the permits, granted by the Division for Air Quality and the Division of Waste Management.

The action follows a promise officials made to area residents last week to re-evaluate the situation.

Cabinet Secretary Phillip Shepherd said the suspension also would apply to two mobile soil-cleaning plants that have permits.

The Green Earth plant, built about 10 miles north of Pikeville on Cowpen Creek, would use a rotating drum to heat petroleum-tainted soils. The process would evaporate off contaminants, such as benzene, and filter them out of the smoke.

Company officials have said the plant's emissions would be 99.8 percent pure. But area residents fear they will be exposed to toxins and claim the state didn't investigate the proposal well enough before granting the permits.

On the applications, International Technology and Trade was listed as the maker of the plant's afterburner. But the cabinet's letter said state officials have been told the company did not make the unit.

The application also contains a diagram of a device that is not part of the Cowpen Creek plant.

Ariel Industries, a Tennessee company, claims Green Earth used plans from a similar plant it makes to get the permit.

The cabinet ordered Green Earth to submit results from tests done on the equipment while it was operated in Wisconsin. It also asked for a full list of the company's owners, officers, directors and shareholders.

Green Earth is a partnership between Toronto-based Green Earth Technologies and Pikeville-based Soil Conversions Assurance Group. Officials from both companies were unavailable for comment yesterday.

Residents are also fighting a proposal by Three-Seasons Inc. to build an identical plant in another part of Pike County. Each plant would handle about 240,000 tons of soil a year.

Three-Seasons' application was put on hold because of deficiencies. Air-quality officials have issued permits for statewide use of two mobile treatment units to Williams Environmental Services of Stone Mountain, Ga., and Statewide Environmental Services Inc., based in Greensburg, Ky.

Burning of toxic soil worries residents

By Allen G. Breed
Associated Press 2/17/92

PIKEVILLE — The furor started in December.

Pike County residents were shocked to learn that Toronto-based Green Earth Technologies Inc. had begun building a strange plant on an old mine site north of Pikeville. The company proposed to treat 240,000 tons of petroleum-contaminated soil a year using a process called thermal stripping.

The shock intensified when people learned that another company — Three-Seasons Inc. — planned an identical plant on the other side of Pikeville.

The outcry led state officials to look closer, and they announced this month there was reason to believe Green Earth had falsified its application. The state suspended permits for the nearly completed plant.

Thermal stripping has been used nationwide for several years, and the U.S. Environmental Protection Agency considers it effective. But Kentuckians fear the Green Earth situation proved state government didn't know enough about the process before approving it.

"What Kentucky failed to do is to get adequate information on the nature of the equipment and its efficiencies, in terms of its ability to burn the compounds," said Tom FitzGerald, director of the Frankfort-based Kentucky Resources Council.

The EPA says there are at least 330,000 underground petroleum storage tank cleanup sites across the country. Matt Rhody, a spokesman for the Kentucky Division for Waste Management, said there were an estimated 3,000 such sites in the state alone.

The soils contain cancer-causing compounds, such as benzene and toluene. These volatile organic compounds are classified by the EPA as hazardous, but the agency carved out an exception for soil contaminated by leaking underground storage tanks.

According to the March 29, 1990, issue of the Federal Register, EPA found it necessary to defer classifying the dirt as hazardous. The agency determined the soil could "overwhelm the hazardous waste permitting program and the capacity of existing hazardous waste treatment, storage and disposal facilities."

"Every filling station would have to be classified as a hazardous waste site," said Gene Coker, an EPA hydrologist in Atlanta.

Two alternatives are to dump the dirt in landfills or to spread it out and allow the compounds to evaporate. But landfill space is growing scarce, and the danger of surface-water contamination is great, Coker said.

He said thermal stripping — which produces reusable dirt — is a cost-effective and "very forthright enterprise."

Dirt is heated in a rotating chamber at 450 to 750 degrees Fahrenheit to "drive off" the hydrocarbons.

Gases go through an afterburner at 1,200 to 1,800 degrees. They then are filtered through a "bag house" or some other scrubbing device to remove particulates.

Hisham Saaid, acting director of the Kentucky Division for Air Quality, said the state has issued permits for two mobile units. However, Kentucky has no specific regulations governing these units, he said.

Kentucky officials are grappling with stricter controls for the process. Three states that have had about two years' experience with the process — Florida, Minnesota and New York — are sharing that knowledge with Kentucky.

None of the four states has an inspection schedule, although all say they would try to make at least one visit annually.

All four require initial tests on emissions, but none requires regular follow-ups. FitzGerald said Kentucky's test is useless because the permits don't spell out specific limits.

All four require preburn and post-burn analyses on the soil, but Kentucky does not specify the frequency of those tests, FitzGerald said.

Kentucky is alone among the four states in not requiring a public comment period on the granting of permits for such units and is the only one that doesn't require covered storage areas for dirt to prevent runoff.

AN ACT relating to air emissions and declaring an emergency.

Be it enacted by the General Assembly of the Commonwealth of Kentucky:

SECTION 1. A NEW SECTION OF SUBCHAPTER 20 OF KRS CHAPTER 224 IS CREATED TO READ AS FOLLOWS:

(1) Any air contaminant source that thermally treats soils that have been contaminated by releases of petroleum from underground tanks at commercial or industrial facilities where the soils are not otherwise regulated as hazardous waste shall be subject to this section, unless it accepts only those soils it has contaminated or those soils contaminated by its wholly-owned subsidiary. Any mobile unit for thermal treatment of petroleum contaminated soils where the unit processes the soils at, or in the immediate proximity, of the site of the soil contamination and which does not receive soils from other contaminated sites or facilities shall not be subject to this section.

(2) The cabinet shall not issue a permit to construct or operate a new air contaminant source subject to this section unless the fiscal court in which that source will be located approves, after public notice and a public hearing, its construction or operation. The

cabinet, upon request, shall conduct a public hearing at the same time the fiscal court conducts its public hearing. The cabinet and fiscal court public hearings shall be held simultaneously. A fiscal court shall not disapprove operation of a source if it has previously approved its construction. The fiscal court shall consider the social and economic impacts of that source on the affected county, including changes in property values, community perception, and other psychic costs; costs and availability of public service facilities and improvements required to support the source and to protect the public health, safety, and the environment; and the relationship of the source to local planning and existing development.

(3) After a preliminary determination has been made concerning the issuance or denial of a permit authorizing the construction or reconstruction of an air contaminant source subject to this section or the modification of a permit for an air contaminant source subject to this section, when modification will cause an increase in the potential to emit one hundred (100) tons per year or more of any pollutant or any significant increase in emissions of a toxic air pollutant, the applicant shall notify the public by prominent advertisement in newspapers of general circulation in the locality in which the source will be located or modified of the application and preliminary determination with respect to the application. The cabinet

shall send notice of its preliminary determination to the applicant, local governmental, land use bodies and local air pollution agencies, and persons on a mailing list that shall be maintained of interested persons requesting to receive the notices.

(4) The cabinet shall provide a thirty (30) day comment period for receipt of comments pertaining to the preliminary determination with respect to applications to construct, reconstruct, or modify an air contaminant source subject to this section, and shall provide a detailed response to all significant comments when the final agency determination is made with respect to an application.

Section 2. Whereas permits authorizing the construction or reconstruction of the air contaminant sources subject to Section 1 of this Act are in the process of being reviewed without an opportunity for the public to comment, an emergency is declared to exist, and this Act shall become effective upon its passage and approval by the Governor.

Defeated soil burning plan won't be revived

By MARY BOYLE
Sun Staff

HUDSON, N.H. – Brox Paving Materials Inc. has no plans to appeal a recent ruling by the

HUDSON

state that denied the asphalt company a permit to burn more than 400 tons of contaminated soil at its Greeley Street plant.

"We have no plans to appeal the ruling, nor do we intend to apply for a similar variance permit in the future," said George Hall, division manager in charge of soil operation.

The Air Resources Division of the Department of Environmental Services (DES) on Monday ruled that Brox may not process 450 tons of contaminated virgin petroleum soil that surrounded an underground storage tank in Manchester owned by Elbes Associates.

The soil was contaminated by tetrachloroethylene and trichloroethylene, two chemicals that have been linked to cancer, liver disease and heart defects in infants.

DES denied the permit request because Brox was not able to show that the denial of a variance permit would produce serious economic hardship on the company, according to the DES ruling.

Hall yesterday explained the situation that he said prompted the longtime Hudson company to request the variance permit.

Hall said about eight

Please see SOIL/14

Soil burning plan dropped

SOIL/From Page 13

months ago Brox was approached by an "environmental consultant" who requested that Brox seek a permit to burn the contaminated material being stored in Manchester.

Hall declined to identify the environmental consultant.

Hall said Brox was apprehensive about seeking a variance permit from the state to burn the contaminated soil because Brox did not think it would meet DES air quality standards.

But he said the company was assured by the environmental consultant that the burning procedure would not violate DES regulations and the permit would be granted.

According to the DES ruling, the granting of the permit would not have violated air quality standards. The permit was not granted solely because Brox failed to show the denial of the permit would have produced serious economic hardship.

Hall said Brox has learned from the incident. The permit seeking process was timely and costly and the company "doesn't plan to go through that again," he said.

The contaminated soil will remain in Manchester, Hall said, "We never take in soil until it's approved," he said.

Hall said the people of Hudson overreacted to the situation, referring to a group of more than 100 residents who crowded into a Town Council meeting earlier this week to voice opposition to the permit, before it was learned the permit was denied by the state.

If the permit was granted, it would have permitted Brox only to process one specific pile of soil, Hall said.

foundations) to residents living along the truck routes. Other possible environmental concerns are odor, dust and fire danger.

Presently, the majority of toxins being released in the Metropolitan area are located on the North Portland Peninsula and across the river in Linnton (see Northwest Environmental Advocates' "Toxic Waters" map, available at Powell's Bookstore for $3.00). DEQ spokesperson, Carolyn Young, stated in the June 24, 1992, issue of The Oregonian that the removal of toxic waste is expensive and far above DEQ's budget. Sonas' toxic pollution would be one more source of contamination for North Portland to contend with.

WILL THE SONAS PLANT INCREASE N. PORTLAND'S ECONOMIC GROWTH?

No. Sonas would employ only 5 to 7 people for its plant operation. Toxic industries discourage clean businesses from relocating to North Portland and bringing better jobs.

WHAT CAN YOU DO TO STOP SONAS?

Write to: John Houser
Metro Council Analyst
2000 SW 1st
Portland, OR 97201-5398

Ask him to revoke Sonas' Metro franchise permit.

Also, please write to:

Vera Katz
2068 NW Johnson St.
Portland, OR 97209

Express your opposition to the siting of the Sonas plant.

Your opposition can also be heard or read by thousands of people simply by calling KKEY Talk Radio, 1150 AM at 222-1150, or by writing To The Editor in The Oregonian and St. Johns Review.

For more information regarding the proposed installation of the Sonas plant, please call:

CITIZENS' REVIEW COMMITTEE

Christy Ingraham, Coordinator, 286-9592
Betsy Valle, Coordinator, 286-9891
Regina Vieira, Coordinator, 289-3548

Stand up for your right to clean air, water and land. Call the Citizens Review Committee today to receive informative literature on the health and environmental hazards of toxic incinerators and other hazardous industry practices.

Letter

To the editor:

A thousand Peninsula residents have signed a petition attempting to prevent Sonas Soil Recovery from setting up an incineration plant for contaminated soil less than a mile from the edge of town.

Citizens in Pennsylvania have been successful in blocking this company from locating there, as I hope we shall be here. Sonas's only operating plant is in Florida, where citizens have complained about noise and odor.

Heavy metals such as lead, mercury, cadmium, etc. occur naturally in any soil and become airborne when burned. Some would be filtered but not all. Centralized thermal treatment would mean accumulation of much of these metals in our neighborhood. For example, a tin can in the ground poses no threat, but burn it and the sub-micra particles may lodge in your lungs.

Products of incomplete combustion, known as PICS, are formed during combustion. To try to identify these with current technology is a bit like hanging wallpaper with a sledge hammer.

The permit from DEQ allows Sonas to emit 17.3 tons of particulates annually, including 32.7 tons of sulphur oxides, 31.9 tons of nitrogen oxides, 3,020 pounds of benzene, and much more. The permit doesn't even mention lead, which is sure to be a factor.

Sonas claims the contaminated soil is not hazardous. Common sense tells you that it is. Otherwise, why bother to clean it? Read the warning label on the back of an oil can in the supermarket. The State of California says, "Chemicals known to cause cancer, birth defects or other reproductive harm are found in and around gasoline stations."

In addition to cleaning soil from around leaking underground storage tanks (known as LUSTs), Sonas plans to clean soil from above-ground spills, bringing it in by train, barge and truck.

Clean-up experts now say it is much better to treat spills "in situ," or on-site. Think of all the energy it takes to dig, load, transport, unload, etc. Also, on-site inspections are more accurate for PCBs, radioactivity and other toxins.

Landfilling is not the only other option to burning. There are many emerging systems using bio-technologies, deep well absorption, etc. If a neighbor walked their dog on your front lawn every morning, and said, "But he has to go somewhere," it would not be your responsibility to find another place. Likewise, we do not want an incinerator in our back yard.

Perhaps some people think it will bring jobs. The Portland Development Commission offered Sonas a $100,000 tax break over three years. For this Sonas need only hire 40 percent of its seven workers from the economic development zone — which does not even include St. Johns.

Schnitzer Steel, who is selling the land, was at a meeting last May where land was taken from other places to put their property into the zone.

A group of citizens will be presenting reasons not to locate an incineration plant in St. Johns to METRO, 2000 S.W. 1st, on Jan. 5, at 5:30 p.m.

Also, Flying Focus will have a video show about Sonas on cable TV Friday, Dec. 11 at 9:30 p.m. on channel 11.

Betsy Valle
North Baltimore Street

Soil Recycle Plan's Environment Impact Sought by C'ville

Cortland Standard 4/1/92

By JON BLACKWELL
Student Intern

A facility planned by Envirosound Recovery Inc. to recycle petroleum-contaminated soil should be examined by a state agency to determine its environmental impact, the town of Cortlandville Planning Board decided last night.

Board members, meeting at the Town Hall, voted unanimously to request that the Syracuse office of the state Department of Environmental Conservation make an environmental assessment of a $3.5 million to $4 million thermal processing unit which ERI wants to build for its recycling plant in Polkville.

The board made its decision after a public hearing in which several Cortlandville residents endorsed the goal of recycling but expressed concerns about the safe operation of the proposed plant.

The Cortlandville Town Board is scheduled to hold a public hearing on the issue tonight at 7:30 p.m. at the Town Hall.

ERI, a company formed last August by Suit-Kote Corp., a Lorings Crossing-based highway paving company, needs an aquifer protection permit from the town board before it can build the processing facility, the first of its kind in central New York. A favorable environmental assessment is necessary before the permit is approved.

Bruce Weber, the town's zoning enforcement officer, said tonight's public hearing will consider the planning board's request that the DEC in Syracuse become the agency which makes an environmental assessment.

At last night's public hearing, Charles Seymour, vice president of Suit-Kote's new soil recovery firm, said ERI's proposed plant would benefit, not harm, the local environment.

"We are taking soil damaged by petroleum products and restoring it instead of sending it off to landfills," he said.

Seymour explained that the thermal process of remediating soil will occur "in a facility much like an asphalt plant." In this facility, he explained, soil would be heated to more than 500 degrees Fahrenheit to remove contaminants. The contaminants would be destroyed in an after-burner.

"The result is soil with a 99.99 percent purity rate," he said.

Seymour said that all materials entering the plant would undergo an analytic test by a DEC-certified laboratory. He emphasized that no substances containing heavy metals or hazardous or toxic waste will be recycled.

Seymour said the DEC has already licensed the ERI plant, which would be built on a 10-acre plot along Route 11 just south of the Suburban Skyliner Diner.

In order to get the DEC permit, no soil whose weight contains more than 1 percent contaminant can be brought into the plant, Seymour said.

ERI has already constructed a facility for the conversion of soil into paving materials on its Polkville site. The facility was approved by the town board last year. Seymour said it processed 500 tons of soil into cold mix asphalt last year before the DEC rescinded the Beneficial Use Determinations (BUD) of all facilities in New York engaged in such conversions.

Once the state reinstates Envirosound's BUD, Seymour says, the facility will begin recycling 4,000 tons of soil this spring.

About six concerned area residents asked questions about the ERI project, focusing on whether contaminated soil might escape the plant and be a hazard. Seymour gave assurances that "we won't emit anything into the atmosphere."

Seymour also he had "no intention" of running the plant's thermal processing device on a full-time basis. He said that the unit would be mobile and would be moved away from Cortlandville often in order to reclaim soil at other sites in the northeastern United States.

One questioner noted that while ERI was conducting tests of its soil treatment process last November in Binghamton, a malfunction occurred and dust clouds formed.

"We are very embarrassed with that day, even though the DEC people sort of shrugged at it," Seymour conceded.

John Buck, who owns an environmental laboratory firm that has cooperated with ERI in testing the soil recycling process, also voiced concerns about safety at the new plant.

"Have you really scrutinized it?" Buck asked planning board members.

"I'm generally in favor it, and it certainly can't be bad for Cortlandville if it's done properly."

Editorial

From the File of CCHW

Better Safe Than Sorry

By opting to name the Syracuse office of the state Department of Environmental Conservation (DEC) as the lead agency to do an environmental assessment of a proposed petroleum-contaminated soil recycling facility at a Polkville site, members of the Cortlandville Planning Board have taken an important step toward finding out as much as possible about the proposed operation before deciding whether or not the required permits should be granted.

On the surface, the soil recycling project sounds environmentally appealing. Instead of simply disposing of such soil in landfills, the contaminants would be removed from the soil through exposure to intense heat. The contaminants would then be destroyed through a process described as being similar to incineration. The only residue from the recycling operation would be soil that is virtually free of contaminants. The operation would be run by Envirosound Recovery, Inc., a firm founded by Suit-Kote Corp. last summer.

Not surprisingly, the oily-soil recycling operation has raised some questions and concerns in the minds of area residents. Would incineration of the contaminants result in harmful emissions? Could contaminants from soil brought to the Polkville plant be environmentally harmful to the area immediately surrounding the facility? What safeguards would exist to prevent soil contaminated with heavy metals or other hazardous or toxic materials from coming into the plant? How great would be the threat of groundwater contamination at the Envirosound site?

Fortunately, officials in the Town of Cortlandville recognize that these are legitimate questions that need to be answered — and that's why they named the Syracuse office of the DEC as the agency to do an environmental assessment of the proposed operation and the thermal processing unit that would be used.

An Envirosound official addressed numerous questions relating to the soil recycling operation and its environmental impact last week during meetings of both the Cortlandville Planning Board and Town Board. Charles Seymour, vice president of Envirosound, assured town officials and area residents attending the meetings that the plant would be operated safely and that no harmful emissions would result from the soil recycling operation. Still, an environmental assessment by the DEC — as well as a formal environmental impact statement — are wise precautionary steps that will help Cortlandville officials make an informed decision about whether or not the required aquifer protection permit should be issued for this particular operation.

Since Envirosound is proposing to build what is reportedly the first petroleum-contaminated soil recycling facility of its kind in Central New York, Town of Cortlandville officials are wise to proceed slowly and carefully by requesting that an environmental assessment of the proposed operation be conducted by the DEC. Clearly, it is better to be safe than sorry when it comes to protecting and preserving the quality of our environment.

Cort. Standard 5/7/92

Questions Are Posed

To the Editor:

In an effort to get more information about the proposed soil burner/incinerator (proposed by ERI — Envirosound, a Suit-Cote subsidiary) I have sent the following questions to Bob Torba, head of regulatory affairs at the DEC, and to the Cortland County Planning Department:

The Polkville facility is located in a flood plain, very near the aquifer. What special regulations exist for handling toxic waste on a flood plain, near an aquifer?

Will the volatilized gasses be distilled and disposed of as hazardous waste, or will they be incinerated, filtered and partly allowed to escape out the stack?

There are other methods that can be used to remediate the sites that already exist in Cortland County, such as in place "vacumn extraction" or rental of a mobile unit for a very brief time. Have these alternatives been thoroughly explored?

How many tons of steam will be emitted from the proposed facility per 24 hours of operation, per week and per month? What will be the effects of the steam (carrying some degree of the initial contamination) being released into a low-lying river valley? Does the area already suffer temperature inversions?

Is the facility likely to need to build settling ponds and leachate collection devices on the flood plain, near the aquifer?

Will filters, scrubbers and leachate be considered hazardous waste, needing to be dumped in a hazardous waste facility? How much waste, needing disposal, will be produced?

What will be released into the Tioughnioga River?

What provisions will be made for unannounced, independent monitoring of stack emissions, airborn particulates and other pollution, (and enforcement) on a 24 hour basis?

What is to prevent the facility from seeking further waivers in order to process more highly hazardous materials in the future?

In the event of accidental environmental degradation or contamination of the aquifer, will the company's liability be limited because it is a subsidiary?

What would be the noise level, in decibels, at the perimeter of the facility and at neighboring properties?

From what geographical area does the company propose to import the toxically contaminated soils?

Has the company sought to site similar facilties in other towns? What has been the result?

Where is the nearest facility like the proposed facility?

Does the company plan to operate the mobile unit at its Homer property?

What are the criteria for deciding if the unit will be mobile or if it will operate in Polkville?

Have neighboring businesses and property owners and county residents been adequately informed concerning the risks of the proposed facility?

How much stress will the proposed facility place upon existing county facilities (such as sewer) and at what cost?

Will the storage of imported contaminated soils occur at other sites in Cortland County?

Will a full Environmental Impact Study, including public hearings, be undertaken?

At what point in the process can the community impose stipulations upon the proposed facility?

Thank you.

Pam Wittlin
Homer, N.Y.

Weathersfield restricts soil plants

By KAREN VIOLETTE
Tribune Chronicle

WEATHERSFIELD — Another community has banned a move to build soil remediation plants within its boundaries.

The township trustees Tuesday adopted a recommendation by the Zoning Commission to allow only mobile soil recycling plants in the township.

Members of the Zoning Commission voted against the plant and similar operations earlier this month.

Niles Remediation Inc. wanted to construct a plant that burns oil and gasoline from contaminated soil in Niles Commerce Park. The company's previous plan to build in Niles was blocked by City Council there. And the company has threatend to take the city to court.

"We effectively accomplished what we set out to do. The interests of the people have been served," Trustee Joseph Takacs said this morning.

Takacs said he researched 10 to 15 other states' laws and found none that permitted permanent soil remediation plants.

"With this method there will be no massing of emissions at any one point in the township," Takacs said.

Much of the emissions from these plants is lead, he said.

Takacs said no one at the meeting spoke in favor of the plants, although Girard attorney Gary Gilmartin, who has acted as a spokesman for Niles Remediation Inc., did attend.

Gilmartin could not be reached for comment this morning. It is unclear whether he or the company will pursue any legal action against Weathersfield.

Gilmartin did speak out at a public hearing last month, calling some of the proposed regulations "unconstitutional."

With a valid EPA permit, the company, once known as Environs, originally planned to build in the Niles portion of the industrial park. When that move was blocked, the company altered its plans by moving less than 200 feet away into the township portion of the park.

Staff writer Christopher Bobby contributed to this story.

> "We effectively accomplished what we set out to do. The interests of the people have been served."
>
> Trustee Joseph Takacs

HEALTH/SCIENCE

Standard-Speaker

TUESDAY, SEPTEMBER 17, 1991 — Page 10

Soil-burning plants blamed for problems

OCALA, Fla. (AP) — A cat-litter plant whose emissions sparked fears of foal-deforming fallout in this thoroughbred horse country says it will switch its industrial kiln to burn clean natural gas instead of dirty oil.

The company, Mid-Florida Mining Industries Inc., also says it will drop plans to get into the side business of cleaning petroleum-contaminated soils in the kiln, where clay is baked dry to form cat litter.

Both steps are an effort to settle a dispute with local environmentalists and area thoroughbred breeders who believe emissions from the plant might be to blame for a rash of miscarriages and deformed foals in the high-dollar horse industry.

The agreement between MFM and We the People for a Safe Environment, a citizen-action group founded by a horse breeder, also calls for the company to pay for the annual spot testing of fuels, clays, adjacent surfaces and groundwaters and to be an active member of a company-community committee to address local concerns.

In exchange, We the People agreed to the suspension of a state administrative hearing that was scheduled after the group asked the state to order the company to stop burning used motor oil as fuel.

"The whole crux of this has been MFM's conversion to natural gas," said David Titus, a MFM spokesman. "We have already taken steps with West Florida Natural Gas toward that direction.

"Once we have hooked up to the pipeline, then We The People will petition that the administrative hearing be voluntarily dismissed."

Dr. Cornelius "Sonny" Link, president and founder of the citizen's group, said he felt the agreement would go a long way toward preserving the health of northern Marion County farm and estate area.

Ocala is the hub for breeding, which is the state's third-most-profitable industry behind citrus and tourism.

The controversy between breeders and the company started last fall, soon after MFM applied for a state permit to build an afterburner that would let the company incinerate contaminated soils containing creosote, coal tar and hydrocarbons.

When Link found out that MFM wanted to burn contaminated soil, he envisioned harmful emissions spewing into the air and floating onto pastures, where it would be eaten by horses.

A recent University of Florida study, done at the request of the Florida Thoroughbred Breeders Association, showed soil samples surrounding the plant didn't contain toxic levels of lead or cadmium.

An average lead concentration of 10.2 parts per million, well below the industry safety benchmark of 30 ppm, were found in soil samples taken within one mile of the plant.

He and feared even small amounts of contaminants could be harmful to the thoroughbreds.

"We're breeding what I like to call Olympic athletes," said Link. He reported several miscarriages at his Flamingo Farm last year.

Other breeders reported deformed or short-lived foals. A necropsy on one that lived less than 24 hours revealed an abnormally high level of lead in its liver.

Florida ranks behind only Kentucky and California in foal production. More than 21,000 people in Marion County are employed in a business that breeders estimate contributes $1 billion annually to the state's economy.

Residents claim state got invalid data for permit

■ Many people say they no longer trust the 'protection' part of the Ohio Environmental Protection Agency.

LOWELLVILLE — One by one they came before the microphone — a final opportunity to vent their frustration and anger at the government agency they have been fighting since May over a controversial soil-burning plant here.

Donald Schregardus, director of the Ohio Environmental Protection Agency, is expected to decide before year's end whether Gennaro Pavers Inc. of Warren will be granted a final permit to operate its facility, according to Grant Wilkinson, a legal affairs deputy for the director.

About 40 residents of Lowellville, Poland Township and Struthers gathered Wednesday night in Lowellville High School gym to state their views for the record during an Ohio EPA public hearing.

Decision: Schregardus will consider a court reporter's transcript of comments and questions along with OEPA officials' responses and other information before making a final decision, Wilkinson said.

The agency granted a 90-day conditional operating permit to Gennaro Sept. 18 after the plant passed emissions tests "with flying colors," according to the agency. Residents continue to question the accuracy of the tests, which measured the amount of lead and other substances released when the plant burns gasoline and other fuels out of contaminated soil.

Faulty tests? John A. Saulitis, the Mahoning Valley Director of Ohio Citizen Action, examined the tests and said they were "invalid." He questioned the test conditions and OEPA test reports, which state a piece of machinery failed during a test. The report concludes that portion of the test was "probably invalid" as a result.

"It would seem that knowingly using invalid data to reach a conclusion ... would establish a new standard of irresponsibility on the part of the Ohio EPA," he said.

Rebuttal: Plant owner David Gennaro rebutted Saulitis' charges, saying the plant has been proven safe "beyond any doubt." Gennaro said the test was redone later.

Saulitis and other residents asked the Ohio EPA to conduct another series of emissions tests and to allow residents to complete their own tests.

County Inspections: Richard D. Setty, chief of the Mahoning County Board of Health's Solid Waste Program, made another plea to the OEPA to allow county inspectors to conduct periodic inspections and tests at the facility.

Setty argued that the county can keep tabs on the plant better than the agency can.

Meanwhile, residents are questioning the agency's motives, saying it has been "bought out" by big business and that it "does not protect residents' interests."

U.S. EPA: Saulitis called for U.S. EPA officials to intervene because he said he no longer trusts officials at the Ohio EPA's district office in Twinsburg.

Ohio EPA will accept written comment until Nov. 18.

THE BLADE

NEWS SECTION 2

FRIDAY, JULY 31, 1992

Soil-cleaning facility planned for Front Street

Residents say they weren't told of plant

BY KIM BATES
BLADE STAFF WRITER

If a plant that removes petroleum from soil was coming to your neighborhood, would you want to know?

Citizens living near 957 Front St., the proposed site for a soil-cleaning facility, say they had no idea that a permit to install had been issued. They claim the notification process — by Toledo's division of pollution control and the Ohio Environmental Protection Agency — is inadequate.

Council members who are on the city's environment, utilities, and law committee said last night they agree.

They met with interested citizens and city officials to discuss the proposed location and ways to improve the notification process.

"This thing has been in the making for some time I guess, and they've been keeping it a pretty damn good secret," said Lou Tomczak of East Toledo, who found out about the permit just before the public comment period ran out.

Thermal Earth Sciences of Dayton has a draft permit to install a facility that would use heat to remove petroleum products such as gasoline and oil from contaminated soil.

The company has a staff recommendation from OEPA and a permit from the city's division of pollution control to install the plant.

It would be allowed to emit up to 47 tons of dust and dirt and 35 tons of organic compounds into the air every year. But the firm said the emissions would be much lower.

The proposed site is near Waite High School, a park, Toledo's port, and blocks of homes. There are more than 3,100 children in the high school and several other nearby elementary schools.

Council member Mike Ferner, the vice chairman of the committee, said the group is working with pollution control to develop a better notification process.

> *"This thing has been in the making for some time I guess, and they've been keeping it a pretty damn good secret."*
>
> **Lou Tomczak**
> *East Toledo resident*

But he is unsure that the city can change the situation with Thermal Earth Sciences. The proposed site is in an industrial area, which is what made it attractive to Bob Abernathy, Thermal Earth Sciences owner.

The usual procedure for a company to acquire a permit to build is as follows:

- ▶ OEPA receives a permit application.
- ▶ Public notice runs in a local newspaper.
- ▶ An information meeting is held if requested.
- ▶ There's an application check and technical review.
- ▶ There are 30 days of public comment.
- ▶ A public hearing is held if requested.
- ▶ Comments are reviewed.
- ▶ OEPA gives a final recommendation and OEPA director rules.
- ▶ The company has a right to appeal the director's decision.

Companies may choose their own sites, as long as they comply with city zoning laws and environmental regulations.

The citizens who did find out about the permit during a 30-day comment period wrote 11th-hour letters to OEPA on the last possible day, halting the company's actions for now.

OEPA will hold a public hearing within two months.

Citizens on the east side say they're concerned about their businesses and their health and that of their children.

The plant would become the second soil-recycling facility in Toledo. The first also is on the east side.

Residents also say the plant would add to the air pollution lingering in East Toledo and moving through all of Toledo.

"When there's something that's tough to swallow, difficult to breath, put it in East Toledo," Mr. Tomczak said. "That's a damn shame."

Developer sues over tainted site

Gasoline fouls Warren property

By JON BARNES
Tribune Chronicle

WARREN — When developer Stephen Lippy decided to go ahead with a small retail center for the northwest corner of East Market Street and North Road, he thought the site was environmentally clean.

That changed as soon as workers began removing the old underground storage tanks from the property, where a gas station once stood.

"We began tank removal in February, and whenever we put our shovel into the ground, a gas odor would appear," Lippy said. "The ground was just completely saturated with gas."

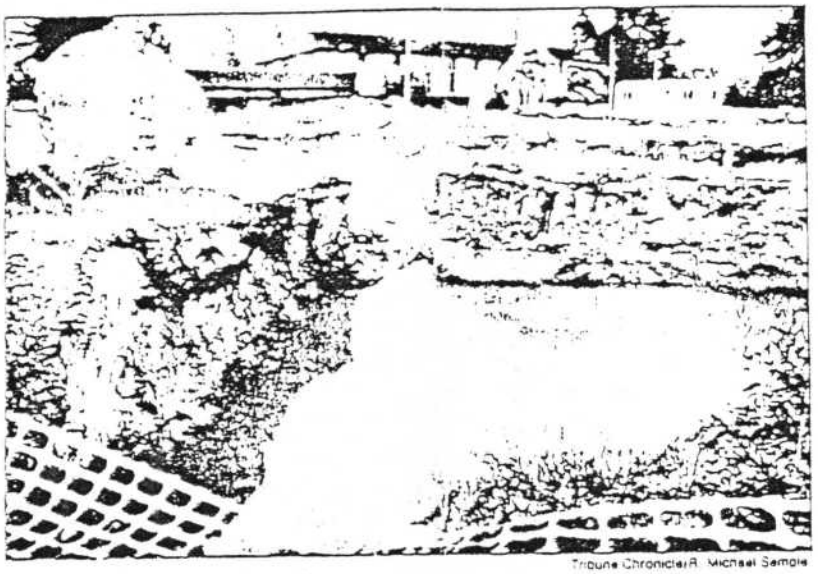
As a result, Lippy and North Mar Center V, the partnership that bought the land last year, could face hundreds of thousands of dollars in clean-up costs. The development, which was to have included small shops catering to the large number of office workers in the area, is on hold.

Unsightly holes now pock-mark the property, shadowed by huge storage tanks containing contaminated water removed from the ground.

Lippy said workers have removed four tanks, and one or two remain underground. An environmental assessment done in 1989 by Universal Asbestos Management Inc. of Youngstown reported that there were only three tanks on the site, he said.

Universal Asbestos is one of eight defendants named in a suit Lippy has filed in U.S. District Court in Cleveland. The suit charges the former property owners with fraud and claims negligence on the part of Universal Asbestos and Society National Bank, which financed the purchase of the property last year and recommended that Universal Asbestos do the environmental testing.

In addition to the Youngstown company and the bank, the suit names as defendants Paul, Phyllis and Richard Maron and Judith Eigenfeld, who owned the property from 1982 to 1990 and sold it to North Mar; Mandel Enterprises, which leased the property and operated an equipment rental business there from 1983 to 1990; and Mobil Oil Corp., which owned and operated a gas station at the site from 1964 to 1978.



Tribune Chronicle/R. Michael Semple

Construction of a retail center at the intersection of East Market Street and North Road in Warren has been delayed while developers wrestle with the cost of cleaning up gasoline-contaminated dirt and water at the site once occupied by a service station.

Sydney Mandel, of Mandel Enterprises, and Richard Maron did not return messages left at their offices. Attorneys for Society and Universal Asbestos refused to comment on the allegations.

The suit seeks at least $600,000 in compensatory and punitive damages, in addition to past and future costs for cleaning up the site.

According to the suit, Society required the property to be given a clean environmental bill of health before the bank would finance North Mar's purchase. The bank recommended Universal Asbestos to do the testing, even though the company had little experience with such work, said Lippy and his attorney, Steven Bell.

Bell said that Richard Maron, one of the former owners, told the company where to take soil samples during the testing.

The company's report concluded no environmental problems or regulatory violations existed at the site, the suit said.

But Triad Consultants Inc., which removed the tanks, found "multiple holes and deep corrosion pitting," and laboratory tests on the soil revealed hazardous substances including chromium, arsenic and lead, the suit said.

Lippy said he is still awaiting word from environmental consultants on what it will take to clean up the half-acre site.

"We took away 1,300 yards of dirt and didn't scratch the surface in terms of cleaning the site," he said.

Budget Cuts + Less Public Review =

More Dirty Dirt Burners

Contaminated soil burners provide a striking example of the potential effects state agency budget cuts and impending changes in SB 359 will have on the public. At least 13 contaminated soil burners, also known as soil remediation/recycling facilities, have been proposed or permitted in Ohio (September OER).

These 13 facilities will thermally treat (that is, burn) over one million tons of petroleum contaminated soils a year. There may be as many as 6 more facilities under discussion. OEC has learned that there is no data on how much contaminated soil there is in Ohio. We suspect Ohioans may be facing another out-of-state waste problem with all these facilities.

Because petroleum contaminated soils could contain hazardous wastes such as benzene, toluene, lead, ethylene dichloride, trichloroethylene, and heavy metals, the OEC believes these facilities should be regulated to the same level of stringency as hazardous waste incinerators. Other states do, but not Ohio.

Most soil burner proposals are for "portable" units. Once a portable unit receives an air permit, it can locate almost anywhere in Ohio on 30 days notice to the EPA and without public input. This amounts to a "cat and mouse chase" as the understaffed EPA chases these facilities all across Ohio. The facility could show up next door to anyone at any time.

Even more disturbing are significant discrepancies in the permits for different burners. In fact, after reviewing eight different permits from three different district offices, it was hard to tell that they were for the same type of facility. This is what we found:

While hazardous waste incinerators are required to destroy wastes at 99.99% efficiency, most soil burners require 99%. However, one proposal, in Hebron, only requires 97.5% efficiency. This means that for every 1 pound of emissions from a hazardous waste facility, soil burners will emit 100 pounds and the Hebron facility will emit 250 pounds!

One facility was allowed to emit 2800 pounds of year a lead while another could emit as little as 80 pounds; others don't even mention lead. Two permits regulate emissions of carbon monoxide, sulfur dioxide, and nitrous oxides; the other do not. Allowable particulate emissions range from 13.3 to 50.4 million tons per year while allowable emissions of volatile organic compounds range from 15 to 40 tons per year.

Meanwhile, U.S. EPA has evaluated 7 different non-thermal remediation technologies. The only significant emissions from bio-remediation or vacuum extraction are a few tons of organic compounds, No lead, no particulates, and no burning.

Beyond the permit terms themselves, there is a major question regarding EPA's ability to enforce them. Ohio EPA announced in September that 8 members of the air pollution control program will be laid-off unless their fee bill, SB 359, is passed--and then agreed to an industry amendment in that bill to increase industry's hold over air permitting procedures while limiting the public's role. See more details on page 3.

Who benefits? Not Ohio's neighborhoods--just the companies wanting to make a fast buck. Again, many of their customers will be from out-of-state.

All About/Gasoline Cleanups

When Water Isn't the Only Thing Coming Out of the Well

By JOHN HOLUSHA

CLARKSBURG, N.J.

THE Amoco gasoline station here has an environmental problem not unlike those of other stations around the country. Over the years, thousands of gallons of gasoline have seeped undetected from the station's underground storage tanks into the sandy soil here, in the central part of the state.

Cleaning up the soil and ground water at stations like Amoco's has become big business for a handful of publicly traded engineering and construction companies that specialize in ground water cleanup. At Clarksburg, the cleanup operation belongs to Handex Environmental Recovery Inc. of Morganville, N.J. With stricter new regulations in place, Handex's sales swelled to almost $50 million last year from $19.5 million in 1988, while net income more than doubled to $5.8 million. The company's shares, first sold to the public in 1989, trade over the counter at about $31 a share.

The company is not the biggest in the business among the public companies. That standing goes to Ground Water Technology Inc., the industry leader with $124 million in sales and Geraghty & Miller, with $110 million in sales. But unlike some of the other companies in the industry, which act as engineering consultants, Handex actually moves the dirt.

The industry owes its rapid growth largely to new environmental regulations. Michael A. Lundy, an analyst with Hambrecht & Quist Inc., an investment firm in New York, estimates that $750 million is being spent annually to clean up underground storage tanks, with some states just beginning vigorous enforcement. Much of the money is provided by the major oil companies trying to limit their legal liability and to comply with state environmental regulations.

"Enforcement drives the market," said Curtis Lee Smith Jr., Handex's chairman. "In New Jersey you have very strong rules and very strong enforcement." Not surprisingly, New Jersey is the company's biggest market, with more than 100 remediation operations underway.

Big-Ticket Items

An Industry Grows On Regulatory Zeal

Underground chemical storage tanks that leak are a major environmental problem. There are approximately 1.4 million large-volume motor fuel and chemical tanks in the ground and, according to the Environmental Protection Agency in Washington, as many as 25 percent of them are leaking.

The escaping material represents a danger to the ground water that supplies 25 percent of the water used across the country for domestic, agricultural and industrial purposes. Fumes carried by underground water can accumulate in nearby basements, risking an explosion or fire.

At the Clarksburg station site, for example, gasoline from the tanks met the first layer of water, at about 12 feet below ground. The gasoline floated on top and began to spread out horizontally as the ground water moved.

Eventually the underground plume of hydrocarbons reached nearby wells used by residents of the area for drinking water and a cleanup was ordered by state environmental regulators. The station (which was once operated by Exxon) is now ringed by 18 wells, from which water is pumped out and treated. Monitoring wells nearby check the progress of the cleanup and the gradual shrinking of the plume of pollution.

As compounds have been added to gasoline, the cost and length of time for cleanups has grown, Mr. Smith said. In the past, he said, the average gasoline station could be cleaned up by pumping and treating for three years at a cost of $125,000. Now a typical job lasts five years or more at a cost of more than $350,000.

Handex and the other cleanup companies do the bulk of their work for large oil companies like Amoco, Shell and Exxon, which can afford to pay cleanup costs and also want to avoid more environmental problems. But where does that leave the unbranded gasoline station, often operated as a family business?

"'Mom and pop' are dead," Mr. Smith said. "How can they afford $100,000 or more to clean up after a leak?" However, he noted that some states have trust funds, based on fuel taxes, to assist in cleanups out of the financial reach of station operators.

Pump Out the Volume

For Bigger Leaks, Grander Plans

Cleaning up ground water contaminated by motor fuels is a tedious business of pumping and treatment. Once hydrogeologists locate the water underground, the direction of the flow and the extent of the spread of pollution, they can design a cleanup plan. For a small leak, one well may do. But for larger one, a network of wells must be designed to pump out the pollution.

Usually there are two pumps to a well. One at or just below the level of the groundwater is used to pull in the liquid gasoline floating on top. A second pump, set deeper, is used to pull the contaminated water out of the ground. At the Clarksburg site, the wells have been drilled to a depth of 22 feet, according to Myrna Seto, a hydrogeologist with Handex.

Once the contaminated water has been lifted out of the ground — by pumps powered by compressed air instead of electricity, to avoid the chance of fire from a spark — the first step is to separate the gasoline from the water. This is done in a holding tank where the gasoline is skimmed off the top.

Since pumping began here in November 1989, more than 1,000 gallons of liquid gasoline has been recovered from almost 2 million gallons of water, Ms. Seto said.

Handex officials expect to continue pumping at the site for five more years to reduce contamination to acceptable levels. With some chemicals, where acceptable levels are measured in parts per billion, contaminated ground water must be filtered repeatedly before its purity is acceptable.

Peckish Bacteria

A Special Solution For Fuel Enhancers

In the early 1970's, when tetraethyl lead was removed from gasoline to reduce harmful lead emissions, it was replaced by other chemicals like xylene, benzene and toluene. These chemicals, which are added to gasoline to increase octane and reduce "knock," had an unintended consequence: Unlike the other components of gasoline, these materials partially dissolve in water, adding to the complexity of treatment. In addition, all three chemicals are considered toxic.

"You end up with two plumes, a floating plume and dissolved plume," said Carl Klepper, president of Fenley & Nichol, an environmental services company based in Deer Park, N.Y. "You have to remove the floating plume and then go after the dissolved."

The three chemicals, known as aromatics, can be extracted from a solution in water by passing the water over beds of activated carbon. Several big tanks of carbon are in a large shed behind the Clarksburg station. Periodically, as it becomes filled with hydrocarbons, the carbon is removed and regenerated by heating. The volatile chemicals are burned as they are driven out of the carbon to minimize air pollution.

Part of the water stream is treated by air stripping in a column that is about three stories tall. The water is inserted at the top where it trickles down over inert material while air is blown upwards. The contact with air extracts the volatile chemicals from the water and carries them into the atmosphere.

Some of the newest octane enhancers blended in by gasoline producers, including methyl tertiary butyl ether and tertiary butyl alcohol, do not lend themselves to carbon adsorption or air stripping. But some strains of bacteria find them to be a tasty meal. So part of the treatment here is to pump the water through a tank filled with bacteria.

Since the treated water is re-injected into the ground nearby, it must meet standards set for drinking water, which limit benzene contamination to one part per billion. "We are flushing the aquifer," Ms. Seto said.

Treating a Case of the Vapors

PUMPING and treating ground water does not clean hydrocarbon vapors trapped in soil above the water line. These vapors can cause problems if they migrate into low subsurface areas where they can re-contaminate cleaned water if the water table rises after a heavy rainfall.

So treatment of a contaminated site often includes air as well as water wells. The shallow air wells are connected to a vacuum pump to draw clean air through the soil where it can pull out the lingering hydrocarbon vapors.

In most cases, the vapors have to be treated, generally by incineration, before they are released to the atmosphere. Volatile organic compounds of the types found in gasoline are an important component of smog in urban areas.

On-site treatment of vapor-laden soil can shorten water cleanup time by two to three years, industry experts say. This method has been used to clean up areas contaminated by solvents like paint thinners, as well as petroleum leaks.

One study done by the General Motors Research Laboratories found that vapor extraction of paint thinner in clay soil cost only 5 percent of the cost of more conventional methods like the excavation and disposal of the soil.

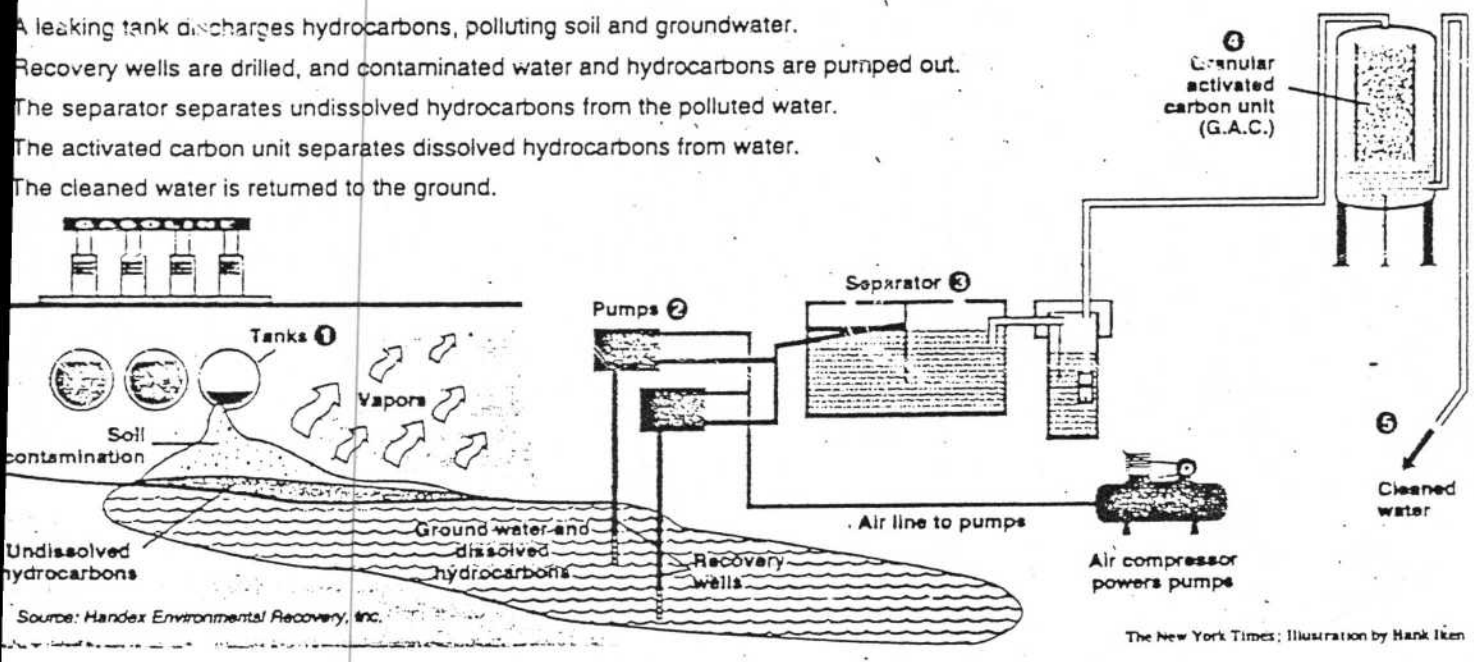
A leaking tank discharges hydrocarbons, polluting soil and groundwater.

Recovery wells are drilled, and contaminated water and hydrocarbons are pumped out.

The separator separates undissolved hydrocarbons from the polluted water.

The activated carbon unit separates dissolved hydrocarbons from water.

The cleaned water is returned to the ground.



Source: Handex Environmental Recovery, Inc.

The New York Times; Illustration by Hank Iken

United States
Environmental Protection
Agency

Environmental Assessment
Washington DC 20460

Research and Development

EPA/600/S6-87/001 Sept 1987

EPA

Project Summary

Evaluation of the Carcinogenicity of Unleaded Gasoline

Larry D. Anderson, Chao W. Chen, Vincent James Cogliano, Aparna M. Koppikar, Robert E. McGaughy, William E. Pepelko, and D. E. B. Potter

In the final report, the likelihood that unleaded gasoline vapors are carcinogenic to humans is evaluated. From carcinogenicity data in animals, an estimate is made of the magnitude of cancer risk a person would experience, if exposed for a lifetime to 1 ppm in the ambient air, under the assumption that gasoline vapors are carcinogenic. All studies believed to be relevant to determining the potential carcinogenicity of unleaded gasoline vapors are reviewed including: (a) chronic and shorter-term animal studies of aerosolized whole gasoline, various gasoline fractions, and analogous hydrocarbon mixtures; and (b) epidemiologic studies of occupations involving exposure to gasoline vapors. Fifty-five epidemiologic studies involving gasoline exposure are reviewed. A quantitative analysis of cancer incidence in the two long-term animal gasoline inhalation studies is performed, an upper-bond cancer risk potency estimate is calculated, and the uncertainties in the estimate are discussed. The major conclusions are: (1) although employment in the petroleum refineries is possibly associated with cancers of the stomach, respiratory system, and lymphopoietic and hematopoietic tissues, exposure to gasoline cannot be implicated as a causative agent because of confounding exposure to other chemicals and inadequate information on gasoline exposure; (2) the occurrence of liver cancer in female mice and kidney cancer in male rats provides "sufficient" evidence in animals that inhalation of wholly aerosolized gasoline is carcinogenic; and (3) gasoline vapors from vehicle refueling might be less carcinogenic than indicated by animal experiments using wholly aerosolized gasoline, if the less volatile components, which are apparently responsible for acute kidney toxicity, also contribute to the observed carcinogenic response.

This Project Summary was developed by EPA's Office of Health and Environmental Assessment, Washington, DC, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).

Introduction

This document presents an evaluation of the likelihood that unleaded gasoline is a human carcinogen and provides a basis for estimating its possible public health impact, including a potency evaluation in relation to other carcinogens. The evaluation of carcinogenicity depends heavily on animal bioassays and epidemiologic evidence. However, other factors, including mutagenicity, metabolism (particularly in relation to interaction with DNA), and pharmacokinetic behavior have an important bearing on both the qualitative and quantitative assessment of carcinogenicity. This document presents an evaluation of the animal bioassays and relevant toxicity studies, the human epidemiologic evidence, the quantitative aspects of assessment, and finally, a summary and conclusions dealing with all of the relevant aspects of the carcinogenicity of unleaded gasoline.

Summary and Conclusions

Animal Studies

A lifetime inhalation bioassay of unleaded gasoline in rats and mice has induced a statistically significant in-

creased incidence (6/100) of renal carcinomas in the kidney cortex of male rats and a larger, also statistically significant, increase in the incidence (20/100) of hepatocellular carcinomas in female mice. Female rats and male mice had no significant treatment-related increase in tumors at any organ site. The increase of renal carcinomas in male rats was statistically significant at the highest dose tested (2,056 ppm) but not at the two lower doses (292 ppm and 67 ppm). However, the combined incidence of adenoma/carcinoma/sarcoma was also significantly increased at the intermediate dose. In mice, the incidence of liver carcinomas alone and adenoma and carcinoma combined was significantly increased in the highest but not the two lower dose groups. Moderate decrements in the body weight gain in the high-dose groups indicate that the maximum tolerated dose was reached. Glomerulonephrosis occurred in nearly all of the male rats, and mineralization of the pelvis was correlated with dose. However, there was no correlation between animals with tumors and those with mineralization.

The same pattern of glomerulonephritis, as well as positive tumor responses, occured with chronic inhalation exposure to synthetic fuels (RJ-5 and JP-10). Chronic inhalation studies with jet fuels used by the Air Force and Navy (JP-4 and JP-5) have resulted in the same nephrotoxic lesions, but no information is available about the carcinogenic response.

In a series of exposures of male rats to a variety of distillate fractions and to individual components of gasoline, toxicity was correlated with the paraffin compounds present in the 145° to 280°F distillate fractions and not with aromatic compounds in the mixture. The most toxic compounds were branched-chain aliphatics, generally in the C6-C9 range, although some larger molecules such as 2,2,4,4-tetramethyl octane also showed a high level of activity. The acute and subchronic renal toxicity of decalin, a volatile hydrocarbon of the same general type as those found in gasoline, is confined to male rats and did not occur in female rats or in mice, dogs, or guinea pigs.

The renal toxicity pattern observed with exposure to hydrocarbon mixtures involving protein accumulation in renal tubules is clearly different than the kidney lesions occurring spontaneously in old rats, and occurs in males of both Fischer 344 and Sprague-Dawley strains, but not in females of these strains or in mice or monkeys. Mutagenesis tests of unleaded gasoline have been carried out in Salmonella, yeast, mouse lymphoma *in vivo* cytogenetics, in mouse dominant lethal systems, and in a rat kidney cell DNA repair model. Various gasoline feedstocks have been tested in mouse lymphoma and *in vivo* cytogenetics assays. The results of most of these assays have not met the criteria for positive responses.

Epidemiologic Studies

Fifty-five studies were reviewed to determine if there is any epidemiologic evidence for an association between gasoline exposure and cancer risk. Since unleaded gasoline was only introduced in the mid-1970's, even recent epidemiologic studies are not likely to show an unleaded gasoline effect because of the long latency period generally associated with cancer. Therefore, this review was not limited to unleaded gasoline exposure, but addressed any potential gasoline exposure.

None of the studies reviewed provided qualitative as well as quantitative estimates of gasoline exposure.

Seven studies were identified that evaluated the association between employment in the gasoline service industry and cancer risks; the industy here includes gasoline service station owners and attendants, garage workers, gasoline and fuel truck drivers, and those who reported working with gasoline. One study cited in the literature provided some evidence of an association between gasoline service station employment and risk of primary liver cancer. The remaining six studies were judged inadequate.

Twenty-five studies were reviewed that evaluated the association between employment in a petroleum refinery (a work environment with potential gasoline exposure) and cancer risk. Judged individually, these studies provided inadequate evidence of an association. However, judged collectively these studies provide suggestive evidence of an association between employment in a petroleum refinery and risk of stomach cancer, respiratory system cancer (i.e., lung, pleura, nasal cavity, and sinuses), and cancer of the lymphatic and hematopoietic tissues.

Nineteen case-control studies were reviewed which evaluated employment in the petroleum industry as a cancer risk factor. Another study cited in the literature provided limited evidence of an association between petroleum industry employment and risk of bladder cancer.

Also reviewed were four protocols of epidemiologic studies in progress. These studies may provide evidence of an association between gasoline exposure and cancer risk; however, these findings are 3 to 5 years in the future.

Quantitative — Data from the API study on kidney tumors in male rats and liver adenomas and carcinomas in female mice were used to derive an estimate of the incremental upper-limit unit risk due to continuous human exposure to 1 ppm of unleaded gasoline. Since the animals breathed an aerosol of whole gasoline under laboratory conditions, whereas humans are expected to breathe only the more volatile components of the mixture, the estimates are uncertain. If tumor induction is caused by the same, relatively nonvolatile C6-C9 branched hydrocarbons that are primarily responsible for the nephrotoxicity in male rats, then the quantitative estimates of the risk of breathing gasoline vapors may be overly conservative. The carcinogenic potency estimate for unleaded gasoline was derived from a continuous exposure study, whereas the actual human exposure is periodic in most cases. The available information is not adequate to determine if this will result in an overestimation or an underestimation of risk. The estimates from the mouse and rat data are similar: 2.1×10^{-3} $(ppm)^{-1}$ from mouse data and 3.5×10^{-3} $(ppm)^{-1}$ from rat data.

The presence of 2% benzene in the unleaded gasoline mixture could theoretically contribute to the response, although the mouse liver and rat kidney have not been the target organs in animal experiments with benzene. Based on those experiments, it is estimated that the contribution of benzene to the response observed in the API unleaded gasoline studies could be on the order of 20%. However, there is no qualitative evidence that benzene actually is contributing to the response.

Conclusions

On the basis of a small but definite kidney tumor response in male rats and a significant hepatocellular response in female mice, using EPA's Guidelines for Carcinogen Risk Assessment to classify the weight of evidence for carcinogenicity in experimental animals, there is sufficient evidence to conclude that gasoline vapors are carcinogenic in animals. The similar pattern of response in rats to the synthetic fuels RJ-5 and JP-10, and the

renal toxicity observed in chronic bioassays with JP-4 and JP-5, support the findings with unleaded gasoline, indicating that some agent or combination of agents common to these mixtures is responsible for the observed effects.

The relevance of the rat kidney response to human carcinogenicity has been questioned on the basis of experiments showing that early-occurring kidney toxicity is apparently caused by the interaction of gasoline hydrocarbon components with a unique protein (alpha-2-microglobulin) produced in large quantities only by the male rat and not other species. If this toxicity were the cause of the kidney tumor response, the case for human carcinogenicity would be weakened. However, given the current evidence, the Carcinogen Assessment Group cannot disregard the rat kidney tumor response as an indication of potential human carcinogenicity for several reasons: (a) the link between hydrocarbon nephropathy and tumor induction is not proven; (b) with very few exceptions, chemicals causing cancer in humans also cause cancer in animals, indicating a similarity of response across the animal kingdom; and (c) the kidney of experimental animals is a demonstrated target organ for more than 100 carcinogenic chemicals.

The EPA Science Advisory Board and the Health Effects Institute have independently reviewed the earlier draft of this report. Both groups agreed that the evidence for carcinogenicity in animals meets the EPA Guidelines criteria for sufficient evidence in animals and inadequate evidence in humans. They both pointed out the uncertain relevance of rat kidney tumors as an indication of human response and the difficulty in making quantitative estimates of gasoline vapor potency from the animal study of whole gasoline when the identity of the carcinogenic component is unknown.

The epidemiologic studies collectively provide limited evidence that occupational exposure in the petroleum industry is associated with certain types of cancer. However, the evidence for evaluating gasoline as a potential carcinogen is considered inadequate under the EPA Guidelines criteria for epidemiologic evidence.

Based on sufficient evidence in animal studies and inadequate evidence in epidemiologic studies, the overall weight of evidence for unleaded gasoline is EPA category B2, meaning that unleaded gasoline is a probable human carcinogen.

The carcinogenic potency of unleaded gasoline, using data from the most sensitive species tested, is 3.5×10^{-3} per ppm. This is a plausible upper bound for the increased cancer risk from unleaded gasoline, meaning that the true risk is not likely to exceed this estimate and may be lower.

This Project Summary was prepared by staff of the Office of Health and Environmental Assessment, Washington, DC 20460.
***William E. Pepelko** is the EPA Project Officer (see below).*
The complete report, entitled "Evaluation of the Carcinogenicity of Unleaded Gasoline," (Order No. PB 87-186 151/AS; Cost: $36.95, subject to change) will be available only from:
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Telephone: 703-487-4650
The EPA Project Officer can be contacted at:
Office of Health and Environmental Assessment
U.S. Environmental Protection Agency
Washington, DC 20460

EPA RANKS 47 INDUSTRIAL PROCESSES AS POSING HEALTH RISK FROM AIR TOXICS

EPA has identified 47 industrial processes -- from more than 350 processes analyzed -- as posing the greatest exposure and health threat from air toxics, and will likely select these sources for early regulation under the air toxics provision of the new clean air law, according to agency officials (see process list below). The pending versions of Clean Air Act amendments require EPA to first select, then regulate, industrial sources on a rolling basis over a 10-year period. The first 10 sources EPA selects will be based on existing work for its NESHAPs (National Emission Standards for Hazardous Air Pollutants) program; but thereafter, EPA will rely heavily on the new source ranking to determine which categories should be tackled next.

The ranking -- which addresses hundreds of sources of the 191 chemicals listed in both the Senate and House committee bills -- represents the first concrete step towards regulating a variety of pollutants from single sources. EPA has been working to devise a system that would control each of a source's pollutants since early in the Bush Administration, agency officials say. The ranking system compiled last summer by EPA's office of air quality planning & standards in Research Triangle Park, NC -- and which will be updated -- will not be used in listing first phase sources but will play a significant role in regulating subsequent phases, according to an EPA official.

To develop the ranking, the agency filtered a wide variety of sources through two different methods for measuring potential exposure and health effects, one official explains. One method rendered relatively high scores to sources emitting multiple chemicals while the second method was weighted to measure emissions of individual pollutants. Put together, the two methods should give a reasonable reading on the relative health and exposure risk of each source, according to the EPA official.

Through the new ranking system EPA found 47 sources with the highest scores for exposure and health threat potential. In all, the agency compiled ten categories of 25 to 50 sources each, offering a comprehensive look at the source categories EPA will review in drafting new air toxics regulations.

EPA sources say that decisions on the first ten sources to be regulated under the new law were dictated by the voluminous information gathered under the eclipsed NESHAPs process. The agency "might have made different decisions" about first phase sources if the new ranking system had been in place earlier in the process of revising the Clean Air Act, according to a source.

Source categories addressed after the first round should be determined by a new ranking system, an EPA source explains. The method for compiling last June's list may be revised but will probably provide the framework for the future source listings, according to the EPA source.

Coke ovens used in steel production and commercial sterilizers, or degreasers, are the only two sources that EPA plans to tackle in phase one that also appear in the group of 47 high exposure, high health threat sources listed by EPA. The agency also plans to regulate the manufacture of organic chemicals in phase one, but will probably use a comprehensive approach in order to bring a range of chemicals under one rule, sources say.

The list of industrial processes is dominated by sources from the energy and transportation fields.

Industrial boilers, light-duty gasoline vehicles, petroleum refining and bulk petroleum terminals are ranked in the top ten, with medium-duty gasoline vehicles, petroleum marketing, and coal and oil combustion following closely. The oil and auto industries have waged furious battles in Congress to limit toxic controls on their industries, perhaps foreshadowing regulatory battles to come. An oil industry source maintains that he would like to see more work done on the ranking method to insure "a more balanced approach."

CATEGORY ONE SOURCES UNDER PROPOSED EPA RANKING SYSTEM

Source Category Name	Source Category Name
Industrial External Combustion Boilers	Gasoline Marketing
Light-Duty Gasoline Vehicles	Tire Manufacturing
Chlorofluorocarbon Production	Industrial Fuel - Distillate Oil
Surface Coating Operations - General	Pentaerythritol Production
Degreasing/Metal Cleaning	Synthetic Organic Fibers Production
Petroleum Refining	Aircraft LTOs - Military
Pesticide Production	Ethylene Dichloride (1,2-Dichloroethane) Production
Cumene/Phenol Production	Rayon Production
Polyvinyl Chlorides and Co-Polymers	Nitrobenzene/Aniline Production
Bulk Petroleum Terminals	Industrial Electric Generation Turbines
Medium-Duty Gasoline Vehicles	Commercial/Institutional Fuel - Distillate Oil
Abs & San Resins Production	Commercial/Institutional Fuel - Residual Oil
Petroleum Marketing	Pharmaceuticals Production
Printing/Publishing	Fabricated Rubber Products
Coke Ovens	Industrial Fuel - Bituminous Coal
Auto and Light Duty Truck Surface Coating	Primary Lead Smelting
Polystyrene Production	Chlorinated Hydrocarbon Production
Coal/Oil Combustion	Caprolactam Production
SBR Rubber & Latex Production	Hexamine Production
Ethylbenzene/Styrene Production	Municipal Solid Waste Incineration
Vinyl Chloride Production	Off-Highway Gasoline Vehicles
Urea-Formaldehyde (Resins & Concentrates)	Taconite Iron Ore Processing
Adiponitrile Production	Off-Highway Diesel Vehicles
Heavy-Duty Diesel Vehicles	

CLEAN AIR REPORT - June 7,1990

Teratogenesis, Carcinogenesis, and Mutagenesis 10:399–408 (1990)

Dangerous Properties of Petroleum-Refining Products: Carcinogenicity of Motor Fuels (Gasoline)

Myron A. Mehlman

UMDNJ-Robert Wood Johnson Medical School, Environmental and Community Medicine, Piscataway, New Jersey

Gasoline contains large numbers of dangerous and cancer-causing chemicals such as benzene, butadiene, toluene, ethylbenzene, xylene, trimethyl pentane, methyltertbutylether (MTBE) and many others. For the U.S. alone approximately 140 billion gallons of gasoline were consumed in 1989. An increase in only ten cents per gallon in price of gasoline generates 14 billion dollars in extra profit per year for oil industry cartel.

Laboratory animals exposed to gasoline developed cancers in different tissues and organs. A number of epidemiological studies in humans provide evidence of increased cancer risk of leukemia, kidney, liver, brain, lymphosarcoma, lymphatic tissue pancreas and other tissues and organs.

Key words: liver and kidney tumors, benzene, hydrocarbons, butadiene, disease

INTRODUCTION

Gasoline is derived from crude petroleum by a variety of refining and manufacturing processes, and its various components are separated by distillation. The refining processes that extend yield and modify the character of gasoline are catalytic cracking, coking, alkylation, and catalytic reforming (Fig. 1). The world consumption of crude in 1986 was approximately 62 million barrels per day. In the United States alone, about 140 billion gallons of gasoline were consumed in 1989.

Liquid gasoline is one of the better-known complex mixtures of petroleum chemicals to which humans are exposed [1]. It consists of more than 150 hydrocarbons with a boiling range of approximately 40°C to 180°C. The gasoline hydrocarbons are comprised of about 50% to 70% of alkanes (paraffins), which consist of straight-chain hydrocarbons of C_4 to C_{12} range; isoparaffins, which are branched-chain hydrocarbons of about the same size; alkenes (olefins), approximately 5% of which are unsaturated linear and branched-chain hydrocarbons; and naphthenics, which are saturated cyclics. Aromatics, which are the most dangerous carcinogenic chemicals in gasoline are pres-

Address reprint requests and correspondence to Myron A. Mehlman, Department of Environmental and Community Medicine, UMDNJ, 675 Hoes Lane, Piscataway, NJ 08854.

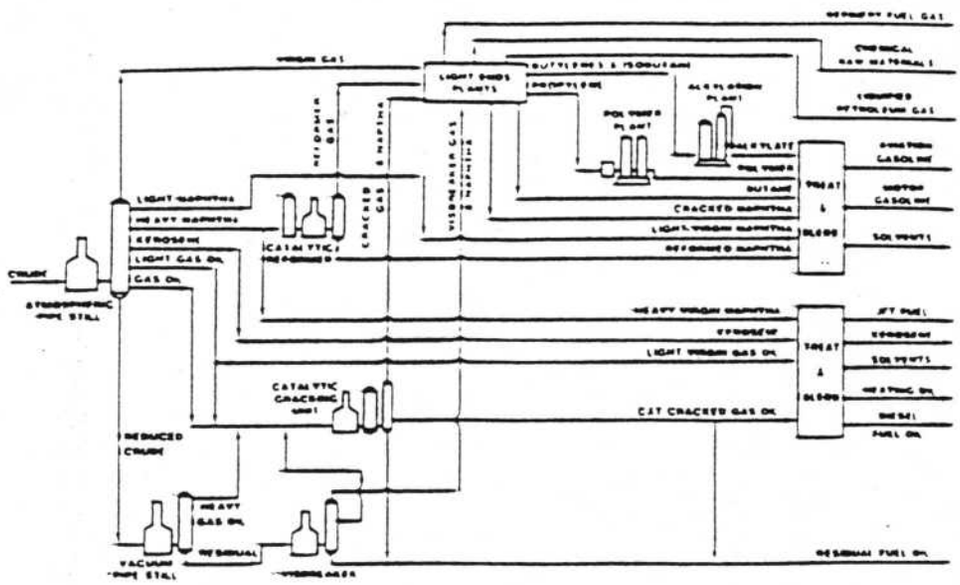


Fig. 1. Fractionization of crude petroleum. (Reproduced from Mehlman, 1984, with permission of the publisher.)

ent at 30% to 40% and consist mainly of benzene, toluene, ethylbenzene, and xylene (Fig. 2). Other blending agents and additives are also present in gasoline [1]. As a result of phasing out in recent years, both tetraethyl and tetramethyl lead—which are strong neurotoxicants from gasoline, alcohols, and others such as ethanol, methanol, tert-butyl alcohol, and methyltert-butylether (MTBE)—are being added at 5% to 20% to the gasoline. Gasoline contains more than 1,000 possible chemical substances.

Humans come in contact with both liquid and vapors of gasoline. There is a substantial vapor released from gasoline, which results in human exposure to gasoline vapors at variety of contact points and most importantly in the massive numbers of retail service stations and adjacent populated areas.

In 1982 the Environmental Protection Agency (EPA) estimated that approximately 3.6 billion gallons of gasoline were emitted into the atmosphere as vapors in the United States alone, of which at least 40% occurred at retail service stations [2]. This volume represents not only a large human population exposure source from gasoline vapors, but also a very significant source of hydrocarbons to air pollution of the atmosphere as well as a major contribution to the greenhouse effect (global warming). In order to deal with this serious problem of emissions, the U.S. EPA initialed vapor controls at bulk transfer points, including retail gas stations, during the unloading and loading of gasoline (Fig. 3). This emission control is called stage I, which collects and recovers displaced gasoline vapors from storage tanks in the retail gas stations and returns them to the tank truck. The stage I controls are now widely implemented in the United States during bulk loading and unloading of gasoline.

Figure 4 shows the stage II controls, where gasoline vapors are released at retail service stations during refueling of cars, with the recovery systems at the gas pump nozzle. Such controls are now in effect in some states, including New Jersey, New York, California, and the District of Columbia. Other states are now considering implemen-

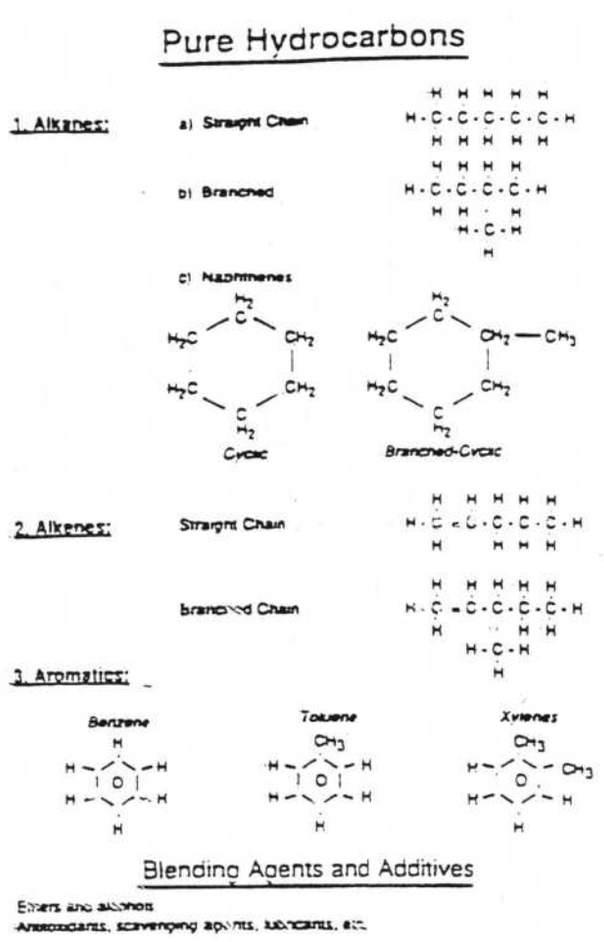


Fig. 2. Chemicals normally found in retail gasoline. (Reproduced from Page and Mehlman, 1989, with permission of the publisher.)

nation of stage II controls in order to reduce gasoline vapor emissions and to protect human health and the environment.

The concern for an increased cancer risk for humans inhaling gasoline vapors or coming in contact with liquid gasoline is based on more recent data showing kidney tumors in male rats and liver tumors in mice exposed to whole vaporized gasoline [3–17], as well as epidemiology studies in refinery workers [29–31]. The results of animal studies are of great importance and significance for prediction of human cancer risk from gasoline.

VAPOR COMPOSITION

Volatility of the individual components in liquid gasoline is the chief factor responsible for the composition of gasoline vapors. The distribution of gasoline components into the volatile phase is related to each component's boiling point and vapor pressure. The differences between the composition of dispensed liquid gasoline and gasoline refueling vapors are rather large for some components (Table 1).

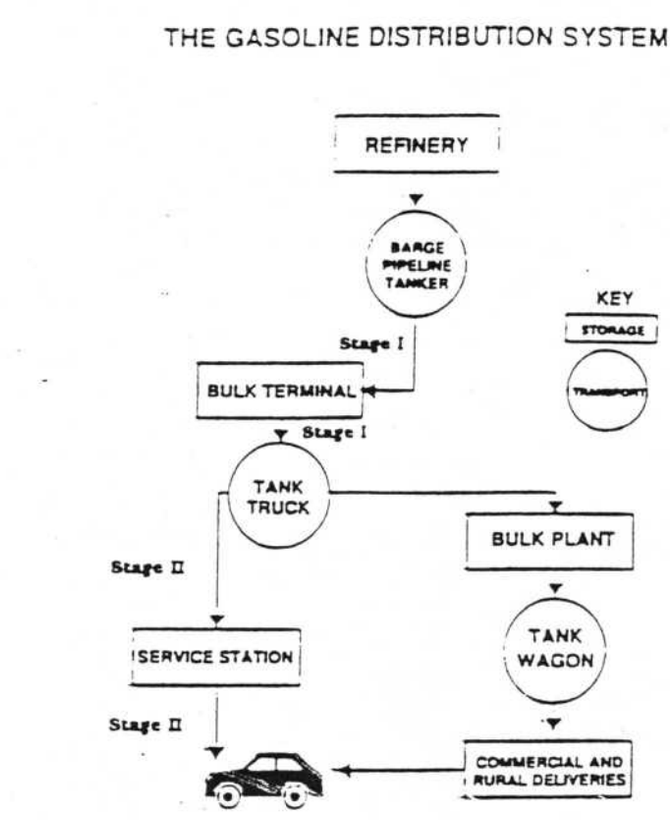


Fig. 3. The gasoline distribution system (Page and Mehlman, 1989).

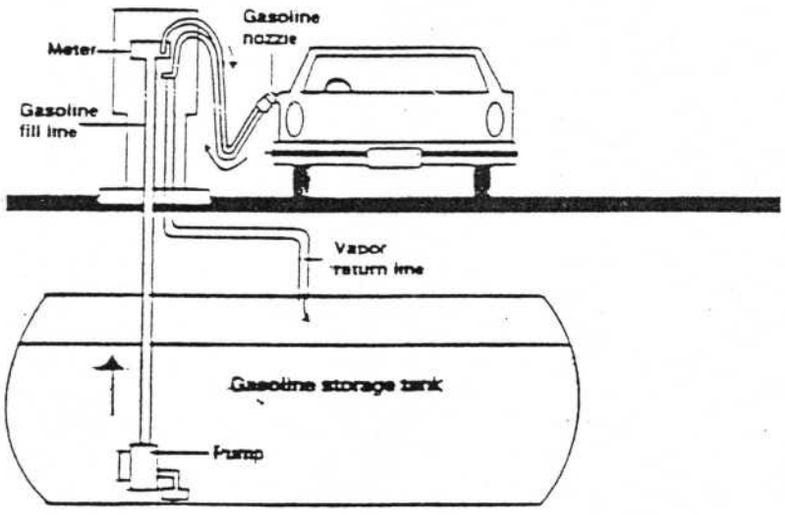


Fig. 4. Stage II recovery of gasoline vapors (Page & Mehlman, 1989).

TABLE I. Comparison of Hydrocarbon Composition in Dispensed Liquid Gasoline and Refueling Gasoline Vapors*

Compound	Dispensed liquid (%)	Refueling vapors (%)	V/L ratios (S/W)
Alkanes (n-paraffins)			
Propane	0.1	5.2	70.2/28.6
n-Butane	6.2	41.1	7.6/6.2
n-Pentane	4.0	5.6	1.9/1.1
n-Hexane	2.7	0.9	0.5/0.3
n-Heptane	1.3	0.2	0.3/0.1
Branched alkanes (isoparaffins)			
Isobutane	0.7	8.8	613.1/11.2
Isopentane	7.4	16.4	2.4/2.0
2-Methylpentane	3.6	2.1	0.8/0.5
3-Methylpentane	2.6	1.2	0.7/0.4
2,2,4-Trimethylpentane	1.8	0.2	0.2/0.1
2,3,4-Trimethylpentane	1.1	0.1	0.1/—
Cycloalkanes			
Methylcyclopentane	1.7	0.6	0.43/0.26
Methylcyclohexane	0.9	0.1	0.24/0.06
Alkenes (olefins)			
Trans-2-butane	0.4	1.7	4.5/4.7
Cis-2-butane	0.4	1.7	4.9/4.6
2-Methyl-1-butane	0.9	1.4	1.8/1.4
t-2-Pentane	1.2	1.6	1.5/1.0
2-Methyl-2-butane	1.7	2.0	1.4/0.9
Aromatics			
Benzene	2.1	0.9	0.34/0.21
Toluene	10.5	0.8	0.10/0.05
Xylenes	4.9	0.1	0.04/0.007
Ethyl benzene	1.2	0.4	0.06/0.008

*Reprinted with permission Society of Automotive Engineers, Inc. from Tironi et al., 1986 [4]. Based on average summer and winter blends. S/W = Summer/Winter.

Human exposure to gasoline vapors is characterized by the vapor phase to liquid phase (V/L) ratio. Humans are exposed to volatile fractions, of which 90% by weight consists of light 4–5 carbon compounds compared with liquid gasoline, 60% of which consists of light 4–5 carbon compounds. The aromatic compounds where the V/L ratio is low show that these compounds are less volatile and remain in the liquid phase.

TOXICITY OF GASOLINE VAPORS

Human exposure to gasoline vapors occurs in service stations, to tank truck operators, and in the surrounding community. The acute toxicity of accidentally ingested liquid gasoline is primarily related to narcotic effects of the C_5–C_8 saturated hydrocarbons and to pneumonitis [6]. The long-term health effects from acute exposure remain to be assessed.

On the other hand, human exposure to vapors occurs frequently, as vapors are emitted in the distribution process, espeically during automobile refueling. Exposure to gasoline vapors in high concentration has occurred from the intentional sniffing of vapors for hallucination effects. The symptoms are eye irritation, dizziness, excitement, intoxication, nausea, anesthesia, muscular weakness, liver and kidney damage. Death has resulted following exposure to vapors for 5 min at 5,000 ppm [7]. Information

TABLE II. Summary of Health Effects of Toxic Gasoline Components

	Benzene	Toluene	Xylene	MTBE*
Carcinogenicity	+ + + +	+ + +	+ + +	No Data
Teratogenicity	+ +	+ + +	+ +	No Data
Genetic effects	+ + +	+ +	+	No Data
Chronic effects	+ +	+ + +	+ +	No Data

*MTBE = Methyl-t-butyl ether. + + + + very strong; + + + strong; + + moderate.

concerning long-term inhalation of gasoline vapors by gas station attendants or refinery workers is suggestive of serious health effects, such as cancer.

CARCINOGENICITY OF GASOLINE VAPORS

Information related to the carcinogenicity of petroleum products has been obtained from animal skin painting studies [18]. The studies show that the carcinogenic activity of petroleum products resides, among others, in polynuclear aromatic hydrocarbons of the 3-7 ring size [18–20]. Studies on carcinogenicity of various gasoline components are summarized in Table II. Studies on the carcinogenicity of gasoline vapors were carried out by the American Petroleum Institute (API) on whole, vaporized gasoline in $B_6C_3F_1$ mice and Fisher 344 rats [20].

The mice and rats were exposed for 2 years to gasoline vapors at concentrations of 67, 292, and 2056 ppm. The results showed a significant increase in tumors in the female mice at a high dose of exposure (Table III). A dose-related increase in kidney tumors (adenomas and carcinomas) was also reported (Table IV).

TABLE III. Incidence of Liver Tumors in Male and Female Mice Exposed to Whole Vaporized Gasoline*

Test group	Animals examined	Total tumors	Adenomas	Carcinomas	% Carcinomas
Control	108	31	13	18	16.6
Low dose	94	28	8	20	21.2
Mid dose	101	34	9	25	24.7
High dose	110	53	13	40	36.4

*Reproduced from Mehlman et al., 1984 [20].

TABLE IV. Incidence of Kidney Tumors in Male Rats Exposed to Whole Vaporized Gasoline*

Test group	Number of animals necropsied	Number of kidney tumors
Controls	49	0
Low dose (67 ppm)	59	
Carcinoma		1
Mid dose (292 ppm)	56	
Carcinoma		2
Adenoma		2
High dose (2,056 ppm)		
Carcinoma		6
Adenoma		1

*Reproduced from Mehlman et al., 1984 [20].

The increase in total liver tumors of both male and female mice in the high-dose-level group should also be considered in evaluation of human risk, with some degree of caution. On the other hand, if one examines the increase in carcinomas of the liver in both male and female mice, the increase in liver carcinomas is dose related and thus significant for evaluation of human risk. For a detailed treatment of factors involved in induction of liver tumors in the $B_6C_3F_1$ strain of mice and its significance, see Trump et al. [28].

THE DATA

Studies by Swenberg et al. [21] of the Chemical Industry Institute of Toxicology (CIIT) sponsored by the petroleum industry through API suggest, but do not prove, that the renal tumors in male rats may be due to a mechanism specific to male rats. The hyperplastic and neoplastic kidney lesions that arose in the rats following chronic exposure to vaporized gasoline were secondary to an accumulation of hyaline droplets within the proximal tubule of the rat kidney.

It was postulated that the accumulation of hyaline droplets caused cell injury or killing, which in turn stimulates cell proliferation and neoplasia [21–24]. Normally, the alpha-2-μ-globulin is secreted from the liver into the blood and excreted via the kidney glomerulus. About 60% is reabsorbed in the proximal tubule cells of the kidney and degraded into its constituent amino acids by lysosome enzymes.

On the other hand, the female rats rapidly metabolized and excreted trimethylpentane and its metabolites, whereas in male rats these products are retained [23]. The significance of these findings to evaluation of human health is still obscure.

EPIDEMIOLOGY STUDIES IN PETROLEUM INDUSTRY

The results of a number of epidemiological studies on cancer risk in workers at gasoline service stations provide evidence of increased risk for liver cancer [25]. Thomas et al. [29] examined records of workers from Oil, Chemical and Atomic Workers International Union (OCAW). A total of 3,105 males whose deaths were reported by OCAW local unions in Texas between 1947 and 1977 were analyzed. Approximately 40% of the deceased were less than 50 years of age at death, and 40% of the deceased were union members for less than 10 years. Proportional mortality ratios (PMRs), adjusted for age and calendar time using the U.S. general population, were analyzed and tested for statistical significance. It was observed that there was a significant increase ($P < 0.05$) in cancer rates of the digestive organs and peritoneum, respiratory systems, and skin. The PMRs for cancer of the stomach and kidney were also significantly higher. These results provide evidence for the carcinogenicity of gasoline vapors in humans.

Also, Thomas et al. in 1982 [30] extended their previous studies of union members in Texas refineries. Again, this study demonstrated a significant increase in cancers of the stomach, pancreas, prostate, brain, and hematopoietic and lymphatic systems (including leukemia).

Collectively, epidemiologic studies of employees in the petroleum refinery industry suggest that cancer risk is of major concern. The unit cancer risk from gasoline vapors and some components of gasoline, benzene, ethylene dibromide (EDB), and ethylene dichloride (EDC) are shown in Table V.

TABLE V. Unit Cancer Risk From Gasoline

Pollutant	Unit risk[a]	Health effects summary	Comments
Gasoline vapor		Kidney tumors in rats, liver tumors in mice.	Gasoline test samples in the animal studies were completely volatilized and therefore may not be completely representative of ambient gasoline vapor exposures.
Plausible upper limit[b]			
Rat studies	3.5×10^{-1}		
Mice studies	2.1×10^{-1}		
Maximum likelihood estimates			
Rat studies	2.0×10^{-1}		
Mice studies	1.4×10^{-1}		
Benzene[c]	2.2×10^{-2}	Human evidence of leukemogenicity Zymbal gland tumor in rats; lymphoid and other cancers in mice.	EPA: listed as a hazardous air pollutant, emission standards proposed. IARC[d]: sufficient evidence to support a causal association between exposure and cancer.
Ethylene dibromide	4.2×10^{-1}	Evidence of carcinogenicity in animals by inhalation and gavage. Rats: nasal tumors; mice: liver tumors.	EPA: suspect human carcinogen; recent restrictions on pesticidal uses.
Ethylene dichloride	2.8×10^{-2}	Evidence of carcinogenicity in animals. Rats: circulatory system, forestomach, and glands; mice: liver, lung, glands, and uterus.	EPA: suspect human carcinogen. Draft health assessment document released for review March 1984.

[a]Unit cancer risk factor is in terms of the probability of a cancer incidence (occurrence) single individual for a 70 year lifetime of exposure to 1 ppm of pollutant.
[b]Confidence interval of 95%.
[c]Derived from human epidemiological data, U.S. EPA Internal Report.

For ethylene dibromide (EDB), the evidence of carcinogenicity is by inhalation and gavage. EDB produced nasal tumors in rats and liver tumors in mice. The EPA has classified the EDB as suspected human carcinogen and has restricted its use as pesticide. Ethylene dichloride (EDC) has also been classified as suspected human carcinogen and has been shown in rats to cause cancer of the circulatory system, forestomach, and glands. In mice, EDC caused cancer of the liver, lung, glands, and uterus.

Benzene is well known and established both in animals and humans as a carcinogen. A chemical that causes cancer in two or more animal species with more than one site should be considered and classified as human carcinogen, based on current scientific state of the art.

It is important that the health effects of various gasoline components—i.e., benzene, toluene, xylene, ethylbenzene (Maltoni et al., personal communication) and others—not be overlooked [26]. In fact, an International Agency for Research on Cancer (IARC) report in 1989 [27] states that gasoline is "a possible human carcinogen."

The U.S. Environmental Protection concluded that, "based on sufficient evidence in animals and inadequate evidence in epidemiologic studies, the overall weight of evidence for unleaded gasoline is EPA category 2A, meaning that unleaded gasoline is a probable human carcinogen."

Thus, based on current scientific state of the art and our scientific knowledge that all known human carcinogens have been demonstrated to cause cancer in animals, the finding by the American Petroleum Institute (API) that gasoline causes cancer in at least two species—rat kidney and mouse liver—as well as human epidemiology studies showing important and significant increases in cancer of the liver, kidney, digestive organs, respiratory systems, skin, pancreas, prostate, brain, and hematopoietic and lymphatic systems establishes gasoline as Class 1A in carcinogen.

CONCLUSIONS

1. Kidney and liver tumors observed in the rat and mouse after exposure for a lifetime established gasoline as a carcinogen.

2. The International Agency for Research on Cancer has concluded that gasoline is possibly a human carcinogen, and the U.S. EPA has concluded that gasoline is probably a human carcinogen. When one combines the weight of total available evidence, it is concluded that gasoline should be classified as Class 1A human carcinogen.

3. Studies on health effects with very low levels of benzene, a component of gasoline, necessitate that all avoidable exposure to gasoline and gasoline vapors be avoided.

4. Because benzene and other gasoline components are known human carcinogens, based on California Department of Health risk evaluation, the benzene level in gasoline must be limited to 0.5% rather than to the current worldwide levels of 2.5% to 5%.

5. Stage II controls should be implemented immediately in all states to avoid significant and important risk of cancer to human populations from exposure to gasoline.

REFERENCES

1. Page NP, Mehlman MA: Health effects of gasoline refueling vapors and measured exposures at service stations. Toxicol Ind Health 5:869–890, 1989.
2. U.S. Environmental Protection Agency: "Regulatory Strategies for the Gasoline Marketing Industry." 49FR31706, Federal Register, August 8, 1984.
3. U.S. Environmental Protection Agency: "Evaluation of the Potential Carcinogenicity of Benzene." Review Draft, Carcinogen Assessment Group, Office of Health and Environmental Assessment, OHEA-C-073-29, 1986.
4. Tironi G, Nebel GJ, Williams RL: "Measurement of Vapor Exposure During Gasoline Refueling." Society of Automotive Engineers, Inc., No. 860087, 1986, 12 pp.
5. Westberg H, Lamb B: "Human Exposures to Gasoline Vapors." Health Effects Institute Report, 1985.
6. Machle W: Gas intoxication, JAMA 177:1965–1971, 1941.
7. Poklis A, Burkett C: Gasoline sniffing: A review, Clin Toxicol 11:35–41, 1977.
8. MacFarland H: Chronic gasoline toxicity, In Mehlman MA (ed.): "Advances in Modern Environmental Toxicology, Vol. 6." Princeton, NJ: Princeton Scientific Publishers, Inc., 1984, pp 51–56.
9. Kitchen DN: Neoplastic effects of unleaded gasoline in Fisher 344 rats, In Mehlman MA (ed): "Advances in Modern Environmental Toxicology, Vol. 7." Princeton, NJ: Princeton Scientific Publishers, Inc., 1984, pp 65–72.
10. Halder CA, Warner TM, Hatoum NS: Renal toxicity of gasoline and related petroleum naphthas in male rats, In Mehlman MA (ed): "Advances in Modern Environmental Toxicology, Vol. 7." Princeton, NJ: Princeton Scientific Publishers, 1984, pp 73–88.
11. Phillips RD, Cocknell BY: Effect of certain light hydrocarbons on kidney function and structure in male rats, In Mehlman MA (ed): "Advances in Modern Environmental Toxicology, Vol. 7." Princeton, NJ: Princeton Scientific Publishers, 1984.

12. Alden CL, Kanerva RL, Ridder G, Stone, LC: The pathogenesis of the nephrotoxicity of volatile hydrocarbons in the male rats. In Mehlman MA (ed): "Advances in Modern Environmental Toxicology, Vol. 7." Princeton, NJ: Princeton Scientific Publishers, 1984, pp 107–120.
13. MacNaughton MG, Uddin DE: Toxicity of mixed distillate and high energy synthetic fuels. In Mehlman MA (ed): "Advances in Modern Environmental Toxicology, Vol. 7." Princeton, NJ: Princeton Scientific Publishers, 1984, pp 121–132.
14. Lipsky MM: A brief review of the toxicity and carcinogenicity of selected chlorinated hydrocarbons. In Mehlman MA (ed): "Advances in Modern Environmental Toxicology, Vol. 7." Princeton, NJ: Princeton Scientific Publishers, 1984, pp 141–152.
15. Berlyne GM: Toxic nephropathies and current methods for early detection of the toxicity of the kidney. In Mehlman MA (ed): "Advances in Modern Environmental Toxicology, Vol. 7." Princeton, NJ: Princeton Scientific Publishers, 1984, pp 173–184.
16. Higginson J, Muir CS, Buffler PA: The epidemiology of renal carcinoma in humans with a note on the effect of exposure to gasoline. In Mehlman MA (ed): "Advances in Modern Environmental Toxicology, Vol. 7." Princeton, NJ: Princeton Scientific Publishers, 1984, pp 203–226.
17. Wen CP, Tsai Shan P, Moffett KB, Boody M, Febson RL: Epidemiologic studies of the role of gasoline (hydrocarbon) exposure in kidney cancer risk. In Mehlman MA (ed): "Advances in Modern Environmental Toxicology, Vol. 7." Princeton, NJ: Princeton Scientific Publishers, 1984.
18. MacFarland HN, Holdsworth CE, MacGregor JA, Call RW, Kane ML: In Mehlman MA (ed): "Advances in Modern Environmental Toxicology, Vol. 6." Princeton, NJ: Princeton Scientific Publishers, 1984, pp 1–297.
19. Roy TA, Johnson SW, Blackburn GR, Mackerer CR: Correlation of mutagenic and dermal carcinogenic activities of mineral oils with polycyclic aromatic compound content. Fundam Appl Toxicol 10:466–76, 1988.
20. Mehlman MA, Hemstreet CP III, Thorpe JJ, Weaver NK: Renal effects of petroleum hydrocarbons. In Mehlman MA (ed): "Advances in Modern Environmental Toxicology, Vol. 7." Princeton, NJ: Princeton Scientific Publishers, 1984, pp 1–281.
21. Swenberg J, Short B, Borghoff S, Strasser J, Charbonneau M: The comparative pathobiology of alpha-2-μ-globulin. Nephropathol Toxicol Appl Pharmacol 97:35—46, 1989.
22. Lock E, Stonard M, Elcombe C: The induction of omega and beta oxidation of fatty acids and effect on alpha-2-μ-globulin content in the liver and kidney of rats administered TMP. Xenobiotica 17:513–522, 1987.
23. Kloss M, Cox M, Norton R, Swenberg J, Bus J: Sex dependent differences in the disposition of [14C]-2,2,4-trimethylpentane in Fischer 344 rats. In Bach P, Lock E (eds): "Renal Heterogenicity and Target Cell Toxicity." Sussex, England: John Wiley & Sons, Ltd., pp 489—492, 19[illegible]
24. Carbonneau M, Lock E, Straser J, Cox M, Turner M, Bus J: 2,2,4-Trimethylpent[illegible]oduced nephrotoxicity. I. metabolic disposition of TMP in male and female Fischer 344 rats. To[illegible]ppl Pharmacol 91:171–181, 1987.
25. Siemiatycki J, Altman R, Bill J: Occupational risk factors and liver cance[illegible]: A retrospective case-control study of primary liver cancer in New Jersey. Am J Epidemiol 117:4[illegible]54, 1983.
26. Rinsky R: Benzene and leukemia: An epidemiologic risk assessment. N Engl J[illegible]316:1044–1050, 1987.
27. IARC Report: "Occupational Exposures in Petroleum Refining: Crude Oil and Major Petroleum Fuels. Vol. 45." 1989.
28. Trump B, Lipsky M, Jones T, Heatfield B, Higginson J, Endicott K, Hess H: An evaluation of the significance of experimental hydrocarbon toxicity to man. In Mehlman MA (ed): "Advances in Modern Environmental Toxicology, Vol. 7." Princeton, NJ: Princeton Scientific Publishers, 1984, pp 273–288.
29. Thomas TL, Decoufle P, Moure R-ERASO: Mortality among workers employed in petroleum refining and petrochemical plants. J Occup Med 22:97–103, 1980.
30. Thomas TL, Waxweiler RJ, Moure RE, Itaya S, Fraumeni JF: Mortality patterns among workers in three Texas oil refineries. J Occup Med 24:135–141, 1982.
31. Ruston L, Alderson MR: "An Epidemiology Survey of Oil Distribution Centers in Great Britain." U.S. EPA, 1982.