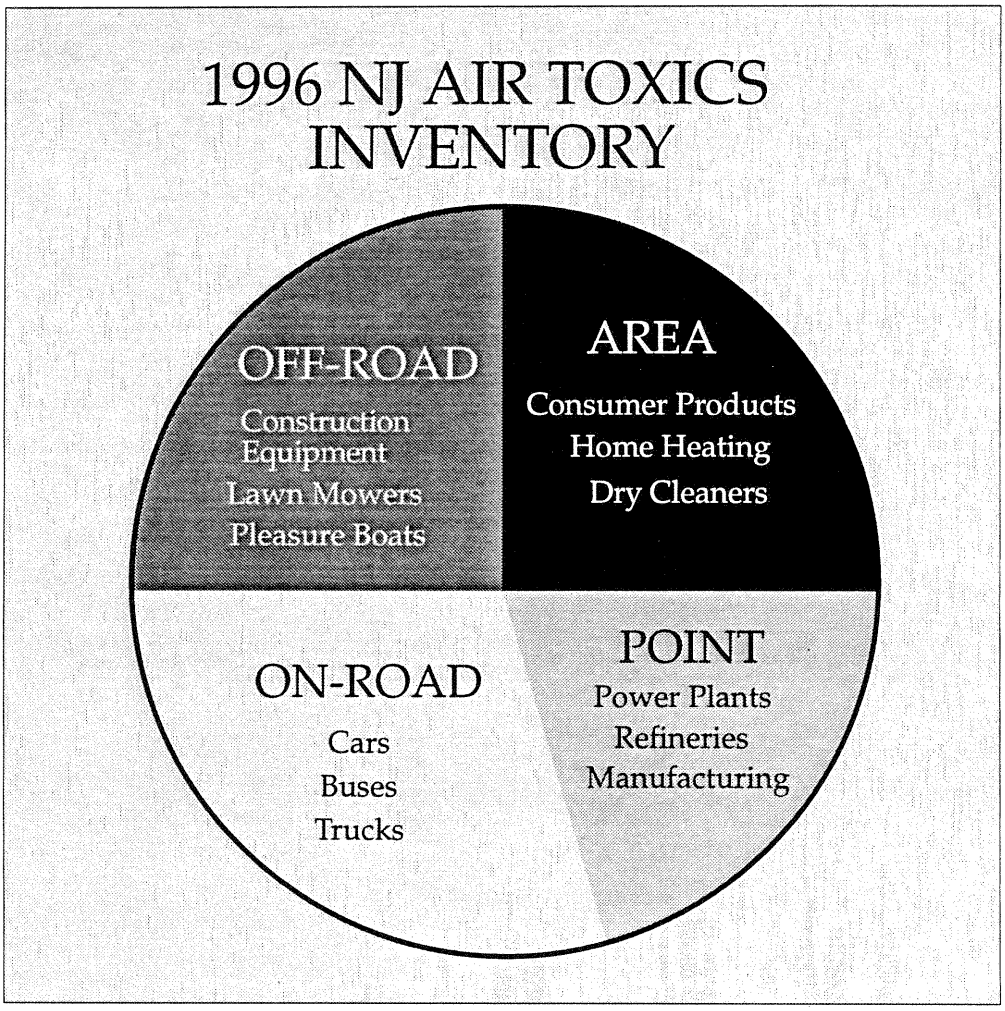
AIR TOXICS IN NEW JERSEY



NEW JERSEY
Clean Air Council
2000 Public Hearing

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Public Hearing
April 12, 2000

"Air Toxics in New Jersey"

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NEW JERSEY CLEAN AIR COUNCIL

Public Hearing, Wednesday, April 12, 2000
Trenton, New Jersey

AIR TOXICS

SCOPE

The year 2000 New Jersey Clean Air Council (Council) public hearing sought information and suggestions regarding the testing and regulation of air toxics in New Jersey. The hearing encompassed the sources and health effects of air toxics, the risk assessment tools and monitoring status of these pollutants. The hearing asked if new regulations were needed and if the current rules were adequately enforced.

In 1998 the USEPA (United States Environmental Protection Agency) revealed comprehensive estimates of air toxics in New Jersey. These estimates came from the 1990 Cumulative Exposure Project (CEP) and highlighted the need to address the issue of air toxics in New Jersey by studying sources in the state and developing a plan for reduction of these toxics.

The hearing included testimony on the nature of the CEP results, the methods of risk assessment, the importance of public education regarding air toxics, the urgency of additional testing sites and the advisability of testing for additional toxics, such as metals, volatiles and semi-volatiles.

EXECUTIVE SUMMARY

New Jersey currently has a comprehensive air quality program. However, although great progress has been made in cleaning up the air through the regulation of industry and mobile sources, the CEP results show that air toxics still pose a threat to human health. The Council believes that additional efforts have to be made to reduce the level of air toxics in the atmosphere.

Although the CEP conclusions are of concern, it should be noted that the data used in the modeling studies were ten years old and more recent NJDEP data indicates that New Jersey's air toxic inventory has decreased from 150,000 tons in 1990 to 65,000 tons in 1996. The difference between the two New Jersey numbers, a decrease of 56%, is one reason why we need better, up-to-date values and improved modeling.

Some rectification of the inaccuracies of the current CEP results should be available within the next year when the NATA (National Air Toxics Assessment) project is completed. NATA is using 1996 data in its modeling and conclusions.

AlthoughTRI (Toxic Release Inventory) date are available for many air toxic sources, they are not available for municipal waste incinerators, medical waste incinerators, mobile sources and non-point sources. These emissions need to be studied and the results of the study provided to the public.

The Clean Air Council supports examining the accuracy of the CEP results, assessing the risk from air toxics, testing more frequently for air toxics in New Jersey and educating the public about the role of industry and the citizenry in the reduction of air toxics.

RECOMMENDATIONS

1. The Council recommends the rapid implementation of Governor Whitman's proposal to expand the air toxics monitoring sites from 1 to 4 and the increased frequency of sampling from every 12 days to every 6 days. The proposed mobile unit would be useful in assessing out-of-state contributions to New Jersey's air toxics.

2. The Council strongly supports the measuring of additional contaminants, such as metals, volatiles and semi-volatiles.

3. The Council recommends a series of special monitoring studies in those areas of New Jersey that exceed the benchmark in modeling studies. The NJDEP should prioritize areas in reflection of the severity of the exceedances.

4. The Council recommends more validation and verification of the data collected in the state.

5. The Council recommends that the NJDEP be alert to the development of new control technologies, so that they may be adopted where appropriate in New Jersey.

6. The Council recommends that the NJDEP and the USEPA require a sulfur reduction in fuel in order to have cars operating at the maximum levels of pollution control.

7. The Council recommends that the NJDEP continue to investigate the sources of mercury emissions in the state.

8. The Council recommends that the NJDEP continue monitoring the use of MTBE in gasoline and develop a policy in accordance with the findings.

9. The Council supports a statewide public education program regarding the impact of automobiles on air quality in general and air toxics in particular.

This program should continue to stress the importance of reducing vehicle miles traveled, the advantage of the use of public transportation, the benefit of the purchase and use of LEVs, ULEVs and ZEVs (respectively, low, ultra-low and zero-emission vehicles), as well as the importance of good vehicle maintenance.

10. The Council supports research into the health effects of indoor air pollutants and the relationship of outdoor air quality and its health effects. It also supports a public education program regarding indoor air toxics and the public's role in curbing them. This program should be coordinated with local and state health departments.

11. The Council continues to support full implementation of the enhanced I/M (inspection and maintenance) program for automobiles. (N.J.A.C. 7:27-15)

12. The Council encourages cooperation between the NJDEP and county and local agencies, such as authorized by CEHA (County Environmental Health Act), in the monitoring and regulation of air toxics.

13. The Council supports the NJDEP's concept of enhancing the current technology-based control strategy with a planning approach that recognizes the complex aspect of the problem to achieve needed reductions. The control strategy developed should include acute episodic releases, as well.

14. The Council recommends that the NJDEP emphasize the multi-media nature of the air toxics problem and all bureaus within the NJDEP should address these pollutants.

SUMMARY OF ORAL TESTIMONY

Robert Tudor - Assistant Commissioner, NJDEP

There are four things that I hope to accomplish in my presentation, that is, identify the geographic and multimedia perspectives of air toxics and identify what the NJDEP has been doing for the last 10 to 20 years about air toxics in the state and what we hope to do.

Air toxics consist of 188 hazardous air pollutants (HAPs) that are present in the air. The effects of air toxics include, not only cancer, but respiratory ailments, birth defects, developmental problems, liver and kidney damage and nervous system damage.

The current strategies in place to reduce air toxics emissions are three:

1. Permitting: Control technology & risk assessment
2. Planning: Side benefits from ozone and particulate regulations.
3. Enforcement: Voluntary reduction through public disclosure, compliance assistance and pollution prevention education.

A new strategy would involve a planning approach. With information from the USEPA, the NJDEP can evaluate exposure and develop new ways to reduce emission from the most critical sources of toxins. Currently, there is only one air monitoring site for air toxics in Camden and it has been operational since 1990.

Governor Whitman has an air toxics monitoring plan. It includes expanding the number of sites from 1 to 4, measuring more contaminants, such as metals, volatiles and semi-volatiles, increasing the sampling from every 12 days to every 6 and conducting special monitoring studies to address local problems. This initiative is funded and should be operational by Fall, 2000.

A mobile unit would also be developed providing the state with place-based monitoring instead of the fixed-base network that the four stations would represent.

The department is expanding its risk screening capabilities to increase the number of pollutants subject to scrutiny as part of the air permitting process.

WILLIAM BAKER – Senior Policy Investigator for the USEPA

As well as the NJDEP program for air toxics, there is a federal program. The current goal of that program is to reduce air toxics by 75% from their 1993 levels by the year 2010. The purpose is to reduce the cancer rates and to reduce some of the other adverse health effects on the respiratory, neurological, immune and reproductive systems from air toxics.

There are 200 million vehicles in the United States. It takes 15 years to turn over the fleet. Our goal is to reduce air emissions in the form of toxics as much as 70% by the year 2020 with the new Tier II standards for cars. We hope to eliminate unacceptable cancer risk from at least 95% of the population. Air toxics also effect the respiratory, neurological, immune and reproductive systems.

There are four components to the federal air toxics program. The first of these components deals with the industrial and commercial sources of air toxics, the second with the toxics problem, the third with assessing the risk and the fourth with public education. The first involves maximum achievable control standards or MACT (Maximum Achievable Control Technology) or the level of control that the large sources of air toxics have to meet under the federal program. Prior to 1990 only eight air toxics were regulated under the Clean Air Act. In the Clean Air Act Congress regulated188 hazardous air pollutants and the USEPA was required to list source categories for these pollutants. The sources were

categorized according to emissions; greater that 10 tons per year for any one pollutant or greater than 25 tons for a combination of pollutants. Then a MACT standard had to be developed for that pollutant. Once a MACT standards is set, it will be determined if it is stringent enough to meet a test of residual risk.

In 1993 there were 5.9 million tons of air toxics emitted. We intend to reduce that by 4.4 million tons. A section of the Clean Air Act still needs to promulgate standards for municipal combustion, hospital infectious waste incineration and industrial commercial waste incinerators. We looked at what residual risk standards would most affect New Jersey and those are dry cleaning and halogenated solvent cleaning, which will be implemented in 2002. In addition, the Integrated Urban Air Toxic Strategy has the goal of a 75% reduction in cancer incidences and a substantial reduction in non-cancer risk. We have identified a list of 30 hazardous air pollutants representing the greatest threat to public health in the largest numbers of urban areas. Those most common to urban areas are benzene, formaldehyde, mercury and hydrocarbons.

ROBERT BABIK – Director of Environmental Practices for the Trade Alliance of Automobile Manufacturers

The Alliance of Automobile Manufactures is a 134-member trade association and we believe that our members have made great strides in curbing air pollution. Air

toxics inventory for New Jersey for 1990 showed just how far automobiles have come in reducing pollution. Since 1967 we have seen a 90% reduction in hydrocarbon levels. Even though people complain about the light trucks, SUVs (Sport Utility Vehicles) and vans not having the same standards as cars, this will end with the Tier II Rule. This rule will go into effect in 2004. It will apply to the entire fleet. So we will see more reductions in VOCs and NOx. We would see more dramatic reductions if more people owned newer cars. It takes about 15 years to turn over the fleet. So the USEPA can regulate, but it takes time to get the vehicles in the market so we can see the impact of the new controls. We will see reductions by 2020 even if we include the increase in vehicle miles traveled and the increase in the number of cars in the pollution equation. As we see the effects of the Tier II Rule, we'll see reductions of 70%.

Another area that needs to be addressed is fuel quality because it has a big impact on how well the vehicles operate. Low sulfur fuel is important because it impacts the catalyst and lowers efficiency. Quickly vaporizing fuel is also critical because it means more complete combustion.

Melinda Treadwell, Ph.D. - NESCAUM

NESCAUM (Northeast States for Coordinated Air Use Management) is a multistate organization representing the air quality interests of the New England

states, New York and New Jersey. During the last two years there have been a number of very important studies that have focused public health professionals on the most potent pollutants. An important aspect of this is the issue of total exposure. These compounds exceed the margin of safety concentration for cancer of one in a million for one compound. Some of these pollutants, such as acetaldehyde, benzene and formaldehyde are in every location. They are coming from mobile sources and especially from non-road sources and some of these pollutants exceed the one in a million risk level in all locations in the northeast. Concentrations of 1,3 butadiene and formaldehyde exceed the one in 100,000 risk level. Heavy-duty diesel and gas vehicles, construction and locomotive are part of the urban area sources.

Although the USEPA is projecting a 70% reduction in toxic emissions from Tier Two Mobile Source Controls, NESCAUM projects only a 30% reduction because of the non-road sector. We predict that benzene, 1,3 butadiene and formaldehyde will continue to be challenges for us.

Clifford Weisel, Ph.D., Associate Professor, Environmental & Occupational Health Sciences Institute.

RIOPA (Relationship of Indoor and Outdoor Personal Air) is the name given to a study that has been testing homes near major highways, dry cleaners and

bakeries and homes that are not located near an obvious pollution source. Currently, the study is sampling three cities: Elizabeth/Bayonne, New Jersey; Houston, Texas and Los Angeles, California. Two different seasonal studies are being done testing VOCs, aldehydes, PM 2.5, metals, and polyaromatic hydrocarbons.

The reason we chose these areas was because in New Jersey we have mobile source emissions in combination with industrial area sources, while in Houston we're looking at predominately industrial sources, and in Los Angeles the sources are predominantly mobile.

The results so far contradict the conventional wisdom that outdoor air emissions from industry, autos, urban area sources, incinerators, landfills and hazardous waste sites are the major influences on indoor air. For instance, in some of the studies there were twice as many VOCs in the indoor air as in the air outside.

Nora Nealis – Director, Neighborhood Dry Cleaners Association

Neighborhood dry cleaners have been greatly impacted by the Clean Air Act, especially the 1990 amendments, which named perchloroethylene, our major solvent, as one of the 189 hazardous air toxics. As a result the USEPA required certain emission controls for all dry cleaners based on the amount of solvent used. The cost of the control equipment was $10,000 and some smaller dry

cleaners were put out of business. Many of the larger businesses were moving toward the new technology because these new machines used solvent more efficiently and thereby saved money. This was probably a greater incentive than the Clean Air Act. Consumption of perchloroethylene in the northeast has been reduced by 70%. However, the new regulation has also reduced the number of dry cleaners to about 35,000, about 1000 of which are located in New Jersey. It has also given rise to drop stores, where the cleaning is done off premises.

Scot Mackey – Director of Regulatory Affairs for the Chemical Industry Council

The Chemical Industry Council represents about 105 manufacturing facilities in the state employing about 104,000 people and producing 24.6 billion dollars in goods. These companies consist of both large and small facilities, research and development companies and as such we have an interest in the USEPA Cumulative Exposure Project or CEP.

The chemical industry has done much to improve air quality in New Jersey over the years. During the years of 1987 to 1994 the chemical industry in New Jersey has traced emission reductions of 60% with an increase in production of over 14%. There are far fewer unhealthy air quality days in New Jersey. There were over 60 unhealthy ozone days in 1993 and by 1997 there were only four. Emissions from industrial sources have been drastically reduced due to the

state's industry Pollution Prevention Program as well as to more efficient manufacturing processes, removal of pollutant and source materials and improved methods for removing contaminants before they are released into the air. Therefore, the chemical industry would like to see regulators look more to mobile sources and area sources for air quality improvement.

The USEPA planned to release the results of the cumulative exposure project in December 1998, but postponed the release due to concerns from the stakeholders who objected to the 10-year old data used in the model. The EDF (Environmental Defense Fund) requested that the data be made public in April 1999 and although the USEPA released the data, they expressed concern about its accuracy. The USEPA cautioned that the results of the modeling should not be used to draw real-world conclusions. There are seven problems with the CEP data:

1. The CEP used 1990 emission estimates that are not relevant to air quality today.
2. The CEP used inappropriately conservative health benchmarks. The cancer benchmark was one in a million for a lifetime exposure of 70 years.
3. Great uncertainties surround the CEP estimates, especially at census tract level.

4. The CEP does not consider a person's actual exposure to predicted concentrations by neglecting to account for movement through various environments, indoor and outdoor.
5. The CEP reflects significant uncertainty regarding emissions data for area and mobile sources. About 80% of the sources came from VOC and PM 10 databases. This data extrapolation results in large uncertainties.
6. The USEPA's Science Advisory Board peer-reviewed the CEP in 1996 and identified many of these uncertainties in the modeling.
7. The CEP has not been adequately compared to real emissions of the 148 chemicals estimated for the 60,000 tracts. Therefore, validation of the CEP is limited.

The CEP is a useful screening tool to identify the HAPs that need further analysis. However, even with improvements, the uncertainties implicit in the CEP make estimates of ambient HAP concentrations unreliable at the census tract level. The Chemical Industry Council supports the increased number of air sampling stations in New Jersey because this is hard data and we believe that the NJDEP will then focus on mobile sources of air toxics and in-state utility air pollution. It is also time to focus on personal actions as a source of air toxics. It is time to realize that non-point sources are the problem. Everyone must drive less and drive LEVs. If non-point sources could be reduced 60% as the Chemical Industry has done, the air would be cleaner for everyone.

Samuel Wolfe – Environmental Policy Manager, PSEG

Toxic air pollutants are a vitally important issue to the citizens of New Jersey. Risk assessment, as regards air toxics, needs to be made meaningful and manageable. The first step is to inform the public of the risk of air toxics and their primary sources. In 1997 the USEPA expanded the Toxics Release Inventory (TRI) program to require electric generating facilities to report on their releases of toxic chemicals. Before this only manufacturing and chemical industries were required to report this data. PSEG not only supported the expansion of the TRI program, but even released their TRI data in advance of USEPA's reporting deadline. This reporting included non-required mercury emissions.

The public's right to understand this information requires that the information be accurate and also that it be placed in context with educational efforts that enable communities to use the raw information to evaluate whether emissions of air toxics pose a threat to human health or the environment. While programs such as TRI provide the public with a wealth of information about the emissions of air toxics, the information cannot be described as complete. TRI data alone paints a picture of air toxics emissions from stationary sources in selected areas. This omits other important sources of air toxics. TRI gives communities no information about toxic chemical release by municipal solid waste incinerators or

by medical waste incinerators, Both are responsible for a large portion of the nation's dioxin emissions as well as acid gases and mercury. Frequently, these incinerators are located in urban areas. TRI gives no information about air toxics from cars, trucks and buses which account for as much as half of all cancers attributed to outdoor sources. Communities that are burdened with heavy motor vehicle traffic have the right to understand the effect that it has on their health. New Jersey Transit's upcoming decision to purchase 1,400 diesel-powered buses instead of clean-running gas vehicles should be noted. More information about sources that can be controlled would help the public evaluate how much we are impacted by TRI reporting facilities as well as those who do not report. However, informing the public is not enough. They need to know what levels of air toxics pose a risk to health. What types of exposure, such as inhalation or skin contact, pose a risk with respect to each air toxic?

TRI works very well as a public report card for the industrial community. The publication of this information serves as an incentive for facilities to reduce their emissions. PSEG was prompted to begin a pilot test of technology that promises to reduce substantially, coal-fired power plant's emissions of mercury and other toxics. However, all of this reporting should not mislead the public into thinking that air toxics emissions overall have been reduced. TRI only scratches the surface of the entire inventory of air toxics. This certainly became evident in the USEPA's CEP project. The comprehensive inventory of air emission for 1990 showed that about one-third of the inventory can be attributed to solvent uses

and motor vehicles and off-road mobile sources contribute another 38%. It is clear that the areas with the largest air toxic emissions are generally those with the highest population density. It is not that the emissions of air toxics from power plants and industrial sources are insignificant, but the public must be educated to understand that these are not the only sources that matter.

All air toxics are not equally harmful to health. The emission of small quantities of highly toxic chemicals may pose a greater risk than emission of very large quantities of less toxic and less persistent chemicals. The NJDEP has identified 25 air toxics of greatest concern in New Jersey by evaluating projected concentrations of these toxics and comparing them to health benchmarks, which are concentration below which no harm to human health would be expected. With all of this information available, we now need a single point of public access and we need to update the data to make it relevant.

While the NJDEP will continue to receive applications for air permits for new or modified sources of air toxics, they need to review the air technologies and risk assessments when they review those applications. It is important to have the public involved in the debate over air toxics. This will focus attention on the air toxics that pose the greatest risks to public health and the environment.

Bruce Olendorf – Middlesex County Public Health Coordinator

As part of the CEP project the NJDEP contacted the Middlesex County Health Department to examine ethylene oxide emissions based on estimating paradigms and the real data that we collected. Predicated on the CEP studies, Middlesex County had two sources of ethylene oxide; St. Peter's Hospital and Robert Wood Johnson University Hospital. Ethylene Oxide is very important in the dry sterilization of medical equipment and dressings. It is a flammable gas that can react violently with many other chemicals. It has a variety of health effects, most importantly its carcinogenic A2 classification.

We identified the user population and consulted the toxic release inventory system We determined how much of the product was actually used and how much was released as either fugitive or stack air emissions. We discovered that St. Peter's wasn't using ethylene oxide anymore. Robert Wood Johnson Hospital used less than a kilogram and released about 260 grams to the air as a fugitive. Based upon the USEPA calculative model this hospital was responsible for 0.6 kilograms of ethylene oxide per bed per year. So we found a major difference between the calculated estimate and the actual validated emissions.

The discrepancy comes from changes in the way ethylene oxide is used. The current process with new technologies guarantees 99.5 percent completed reaction. That means that greater than 99.5 percent of the ethylene oxide has degraded into water vapor and carbon dioxide. Also, the USEPA did know that the American Hospital Association has a voluntarily performance standard. Hospitals are voluntarily reducing the amount of ethylene oxide used.

It is important to note that it was not until 1990 or that some of the larger companies had the sensors and the engineering processes available to accurately estimate emissions. Many of these assumptions about emissions are wrong. We had two potential emitters of ethylene oxide in Middlesex County and it turned out that St. Peter's didn't use the process anymore and Robert Wood Johnson's technology eliminated most emissions.

So too with the CEP results, the USEPA paradigm was out of date and did not reflect current practices. True community risk assessments have to involve the identification of point sources.

James Sinclair – NJ Business and Industry Association (NJBIA)

The New Jersey Business and Industry Association supports additional monitoring stations in order to obtain solid data on air toxics. The current CEP is

flawed because of the outdated information on which it was based. Good science is important so that people are not unduly alarmed.

As I spoke to our members regarding the issue of air toxics, it was clear that the business community supports accurate air monitoring, strategically placed monitoring stations, involved stakeholders and well-published results.

Steve Eisenreich, Ph.D. – Rutgers, Professor of Environmental Sciences

I want to discuss an aggressive state, federal and university effort called the NJ Atmospheric Deposition Network. Formed in October 1997, the network's first site was in New Brunswick with added sites at Liberty Science Center, Sandy Hook, Washington Crossing, Camden and Tuckerton. More recent sites include one in northwest New Jersey and one is Cape May. The most complete data is focused on Sandy Hook and the Liberty Science Center characterizing the local and regional areas for volatile organics, mercury and nitrogen.

Among other things, the network is concerned with the organic contaminants that are deposited from the air into the Hudson River Estuary. The data from these sites is used to assess the role of deposition in watershed management and the relative role of organic deposition and trace metal deposition relative to other sources of contaminants. We are even looking at out-of-state emissions relative

to in-state emissions. Some of the target chemicals are polychlorinated biphenyls or PCBs, DDT, dioxin, furans and other organic chemicals. All of these are very concentrated in the harbor area and they volatilize out of the bay and contribute to pollution of the local atmosphere. These chemicals are emitted to the atmosphere from surface waters. We used to think of them as just entering the river or stream and not as contributing to atmospheric pollution. Conversely, the atmospheric contaminants contaminate the water through deposition. This occurs in areas where there is no known use of the chemical or solvent. Transport is an important feature, therefore, of this circular phenomenon.

It is our goal to estimate atmospheric deposition to surface areas and most of our data concerns the Hudson estuary. We collect rain and snow and measure its contaminant level in order to determine the amount of contaminants coming from rainfall. We also have various strategies to estimate deposition when it's not raining or snowing. This dry deposition is a particularly important mechanism for large particles and small particles in the atmosphere, which are concentrated in urban industrial areas. We measure organic gases, which are also being deposited into the water. Looking at the data from Sandy Hook, New Brunswick and the Liberty Science Center, essentially related to the Hudson River Estuary, we are concerned with 80 different PCB compounds (polychlorinated biphenyls). We are primarily looking at atmospheric concentrations, which are considerable in all of these areas, probably ten times higher than average. These

concentrations are in the gas phase not particles. However, the concentrations at Liberty Science Center are 2.5 times higher on average than at Sandy Hook.

We are also measuring concentrations of PCBs in the Pinelands and some urban industrial centers, which indicate that these areas are releasing PCBs. Probably half of the concentrations that we measure in that region derive from volatilization out of Raritan Bay and the lower Hudson River Estuary. Water, therefore is a source of PCBs in the atmosphere and vice versa. Our study is trying to determine the long-range and short-range transport problem. It is important to note that about 60% of atmospheric concentrations can be accounted for based on a change in temperature. These chemicals are remobilized from surface sources when it is hot and deposited when it is cold. They transport between water and air in this way. This is the reason these chemicals are transported worldwide. An example of transport comes from the chemical chlordane. Since it is a pesticide used to kill fire termites, its use was predominantly in states south of New Jersey. However, we found concentrations in excess of 220 picograms per cubic meter in the air in New Jersey. This concentration could only come from transport.

The work that we have done represents the first quantified deposition for PCB, chlordane, DDE (a transformation product for DDT) for these areas. You will recall that DDT was banned in 1972.

Charles Drevna – Director, Oxygenated Fuels Association

OFA is a trade organization established in 1983 to advance the use of oxygenated fuel components. We understand the impact of mobile sources on air toxics and some of this is associated with the Federal Reformulated Gasoline or the RFG program. The use of MTBE and its impact on water quality in the state is also a concern. While significant progress has been made toward curtailing the contribution of mobile sources to air toxics through the implementation of RFG program, more research is needed to reduce emissions of carcinogenic compounds such as benzene. The prohibition of MTBE could adversely affect air quality in New Jersey. For New Jersey, air toxics from mobile sources is 38% of the inventory. This is high, as the national average is only 21%. Although there has been a downward trend in air toxics emissions in New Jersey, several air toxics are still above benchmark values. Some of the benefits of RFG have been dramatic. For instance, monitored benzene concentrations declined by 31 percent between 1994 and 1997. Toxic emission reductions overall, since the introduction of RFG, are estimated to be 2,258 tons in 2000 in New Jersey alone and that's equivalent to the removal of 1.3 million vehicles from the roads of New Jersey. The fact is that higher gasoline aromatics will result in increased ambient air toxic levels because aromatic content is tied to the fate of the oxygenate standard. Repeal of the 2% oxygen requirement will result in an increase in gasoline aromatics content, such as benzene, toluene, ethyl benzene, xylenes and such. This will occur as refiners seek to replace the

octane of MTBE with high-octane refinery-produced blendstocks. When this happens, the increase in gasoline aromatics content is expected to be substantial. Not only are oxygenated compounds such as MTBE by far the highest-octane materials available to refiners, they are also currently blended at 11 to 15 percent by volume into RFG.

Unfortunately, ethanol oxygenated fuels are not a viable alternative for New Jersey at this time due to a variety of considerations. For example, ethanol is currently unavailable in commercial quantities in New Jersey or the northeast. Even if ethanol could be brought to New Jersey in sufficient quantities by truck or rail, New Jersey is precluded from switching to an ethanol oxygenated RFG short-term by the absence of sufficient storage for ethanol. Because of its tendency to absorb water, ethanol-blended gasoline poses a number of supply, storage and distribution issues.

Richard Dunlap – Warren County Environmental Commission

While the air is certainly cleaner than it was during the industrial revolution, we still have a long way to go, especially in Warren County. Our county is certainly being polluted from the Martin's Creek plant, which is PPL Power Plant, which is an electrical, generating plant putting out sulfur dioxide. Warren County is the only county in the state that has failed marginally the sulfur dioxide requirement. I

think New Jersey should stand up like New York is doing, like Governor Pataki, and start making sure that our sister states start doing something about it.

Citizens end up paying for this pollution in three ways, in our energy bills and in the cost of health care and then we pay for the clean up. We want a moratorium on new coal-fired power plants. We are also requesting a monitor for Warren County so we can identify where the pollution is coming from.

Michael Gotchfeld – Professor of Environmental Community Medicine, Robert Wood Johnson Medical School

I have been involved in mercury and other heavy metal research for over 30 years, both as a clinician, as a teacher and doing research on heavy metals in the environment. I am currently the Chair of New Jersey's Mercury Task Force, which has been studying mercury, sources and impacts for the past 18 months.

The Task Force involves a combination of people from industry, academia, public interest groups and governmental agencies, commissioned to review the impact of mercury pollution and identify possible sources. Our task also included determining the impact on New Jersey's environment, on ecosystems, on human health and to make recommendations regarding policies for reducing the emissions of mercury.

Mercury, as everybody knows, is a unique substance. It has very potent toxic properties to virtually all living organisms. It was at one time used as a fungicide and a biocide in marine paints. Public health is most concerned with methyl mercury, that's the form that can be produced in the environment when organic mercury is acted on in the bacteria in lake bottoms. Methyl mercury is far more toxic to the vertebrae nervous system and more easily taken up into organisms and bio-amplified. Measurable substantial amounts accumulate in the food chain. It is also widely recognized as another air toxic that we eat and that we drink in our water. That's the exposure pathway of most concern.

We are especially concerned with the presence of mercury in fish. The USFDA set an action level of one part per million (PPM) of mercury in fish tissues. In New Jersey the average levels of mercury in some species of fish taken from reservoirs exceeded the 0.5 PPM. The main receptor for mercury is the nervous system. It is especially dangerous in developing fetuses.

We have developed a flow chart of the mass balance of the mercury in the state, including, regional air transport from other states, perhaps from other nations. We are working on the development of specific reduction programs, particularly mercury emissions from the conbustion of in fossil fuels.

The Task Force supports all regional efforts to reduce mercury in the environment. Much more research is needed in this area. Already hospitals are attempting to reduce their use of mercury. We are hoping that will begin to go on in other industries as well. here.

Rev. Joseph Parrish – St. John's Episcopal Church, Elizabeth

The State of New Jersey could probably lower its cancer and asthma incidence by up to 50 percent or even more by charging a $5.00 fee for every gallon or 10 pounds of material burned or emitted in the state. This would lower the burning, lower the emissions of carcinogens, lower the particulates and lower the NOx and ground-level ozone. This fee could be applied to every gallon of diesel fuel, every pound of garbage burned, every pound of chemical emitted into the atmosphere. Particularly, higher diesel costs would encourage the use of clean buses and trucks, the highest mobile sources of the most carcinogenic particles. The fee would encourage the closing of all incinerators and inhibit the emissions of all chemicals from the refining chemical industry.

Short of that $5.00 fee, the cancer and asthma rates will continue to climb. As stopgap measures, the state could prohibit all incineration, buy clean air hybrid and natural gas buses, inspect all trucks crossing its highways annually and

require 50 percent less emissions from those trucks, and require zero emissions from refineries and all chemical processes.

We in Elizabeth have another enormous problem, in addition to the half million new diesel truck trips made into and out of our city annually, since the New York City garbage began to flow there November 16,1999. Appeals to the Governor and NJDEP Commissioner have yielded no positive response or any relief. All of this garbage is separated from the community by about four inches of fencing. When the air currents downdraft, the community is besieged by garbage odors and infections. It is environmental racism of the most blatant form. We have asthma rates 10 times the national average.

Nancy Fiedler – Environmental and Occupational Health Sciences Institute (EOHSI)

I am here to describe a controlled human exposure in which people were exposed study to several different concentrations of gasoline vapors, two of which included 11 percent MTBE and one including 15 percent MTBE. This study was supported in part by the NJDEP and the ARCO Chemical Company. We studied four different exposure scenarios: clean air, gasoline alone, gasoline with 11% MTBE and gasoline with 15% MTBE. We attempted to mimic environments in which people would be exposed as well as the length of

exposure one might experience at a formal refueling site. This study showed that there were acute health complaints when MTBE was increased in gasoline, but we know that these health complaints didn't occur in all of the individuals. The exposed individuals were not told when they were being exposed or to what. We found no metabolic differences in the way people respond to MTBE. None of the participants were able to identify which condition they were in. The SRS or self-reported sensitives were more sensitive when they were exposed to gasoline. However, there was no difference at 11% MTBE, but some difference at 15% MTBE. There were no significant differences in the neurobehavior. After their exposure we saw no differences between the SRS and the control.

The conclusions that we derive from the study is that the self-reported sensitives did exhibit significantly more than the control subject, when exposed to gasoline with 15% MTBE; symptoms; while exposure to gasoline with 11 % MTBE did not trigger any symptoms among the SRS. With exposure to 15 percent MTBE among the self reported sensitives the symptoms reported were not accompanied by performance detriments or physiologic changes.

Lisa Westerfield - SRE Biotech

The problem with most pollution control systems is their expense. An air pollution control system that is affordable to install and operate is the biological treatment system developed in conjunction with NJIT. This Clean Air Plant or CAP is capable of oxidizing organic compounds, nitrogen oxide, and sulfur dioxide into non-harmful compounds like carbon dioxide and water.

Researchers have had some success with biofilters that treat odors, VOCs and HAPs and petroleum hydrocarbons. They are also used to oxidize chlorinated compounds, NOx and SO2 into harmless compounds. The U.S. market for biofiltration is estimated to be in the neighborhood of $100 million per year. However, the design and large footprint of most biolfilters makes them impractical for use by many facilities.

Clean Air Plants represents a technological breakthrough because it miniaturized the process of biological oxidation. CAPs are self-contained spiral cartridges on which enzymes are evenly distributed. Ambient air is drawn into the CAP and forced around the cartridge not through the medium. The air is scrubbed by contact with the enzymes as it is carried through the cartridge by recirculating water. Contaminants are oxidized to CO2 and water and clean air is released.

Chang Tai – Concerned Citizen

I am an environmental engineer working for a large corporation. I am here to suggest that ethanol should be considered as an alternative to MTBE. It has been used successfully in Brazil for more than 20 years.

There has been enormous financial investment in new technologies and this is one that has not been sufficiently explored. Ethanol is a sustainable source of oxygenation for fuel. Although start-up costs may be expensive, in the long-term ethanol use will save money.

WRITTEN TESTIMONY

Pat Parsons – Concerned Citizen

Although the NJDEP and the regulated community have made great strides in improving air quality in New Jersey, a frequently ignored area is indoor air pollution. Comparative risk studies performed by USEPA and its Science Advisory Board have consistently ranked indoor air pollution among the top five environmental risks to public health. Some studies indicated that indoor air

levels of many pollutants might be 2 to 5 times higher than outdoor levels. Since people spend 90% of their time indoors, indoor pollution is important.

My recommendations to the Council include increasing NJDEP funding for radon testing and promoting legislation at the state level of a ban on smoking in indoor public areas.

Theo Coburn, Dianne Dumanski and John Peterson Myers – Authors, "*Our Stolen Future*".

Air toxics, especially PCBs and pesticides, are known ESDs (Endocrine System Disrupters). Scientific studies seem to indicate that these toxins are responsible for higher rates of reproductive organ cancers, lower fertility rates worldwide and distortions in sexual function, especially in animals. Neurological damage is also associated with these chemicals.

Controlling these substances and reducing our reliance on them is an important goal for the overall health of humans and the earth's ecosystems.

Glossary of Acronyms

CEHA – County Environmental Health Act

CEP - Cumulative Exposure Project

EDF – Environmental Defense Fund

HAP – Hazardous Air Pollutant

LEV – Low Emission Vehicle

MACT – Maximum Achievable Control Technology

NATA – National Air Toxics Assessment

NESCAUM – Northeast States Coordinated Air Use Management

NJDEP – New Jersey Department of Environmental Protection

NOx – Nitrous Oxides

OFA – Oxygenated Fuel Association

PCBs – Polychlorinated Biphenyls

SRS – Self-reported Sensitive

SUV – Sport Utility Vehicle

RIOPA – Relationship of Indoor to Outdoor Personal Air

RFG – Reformulated Gasoline

ULEV – Ultra-low Emission Vehicle

USEPA – United States Environmental Protection Agency

VOC – Volatile Organic Compound

ZEV – Zero Emission Vehicle

CAC PUBLIC HEARING HISTORY

1999	The Impact of Electric Utility Deregulation on New Jersey's Environment
1998	CLEAN AIR Complying with the Clean Air Act: Status, Problems, Impacts, and Strategies
1997	Particulate Matter: The Proposed Standard and How it May Affect NJ
1996	Clearing the Air Communicating with the Public
1995	Strategies for Meeting Clean Air Goals
1994	Air Pollution in NJ: State Appropriations vs. Fees & Fines
1993	Enhanced Automobile Inspection and Maintenance Procedures
1992	Impact on the Public of the New Clean Air Act Requirements
1991	Air Pollution Emergencies
1990	Trucks, Buses, and Cars: Emissions and Inspections
1989	Risk Assessment - The Future of Environmental Quality
1988	The Waste Crisis, Disposal Without Air Pollution
1987	Ozone: New Jersey's Health Dilemma
1986	Indoor Air Pollution

1985	Fifteen Years of Air Pollution Control in NJ: Unanswered Questions
1984	The Effects of Resource Recovery on Air Quality
1983	The Effects of Acid Rain in NJ
1981	How Can NJ Stimulate Car and Van Pooling to Improve Air Quality
1980	Ride Sharing, Car- and Van-Pooling
1979	What Are the Roles of Municipal, County, and Regional Agencies in the New Jersey Air Pollution Program?
1978	How Can NJ Meet its Energy Needs While Attaining and Maintaining Air Quality Standards
1977	How Can NJ Grow While Attaining and Maintaining Clean Air Standards?
1976	Should NJ Change it Air Pollution Regulations?
1974	Photochemical Oxidants
1973	Clean Air and Transportation Alternatives to the Automobile and Will the Environment Impact Statement Serve to Improve Air Quality in NJ?

1972	The Environmental Impact on Air Pollution: The Relationship between Air Quality, Public Health, and Economic Growth in NJ
1971	How Citizens of NJ Can Fight Air Pollution Most Effectively with Recommendations for Action
1970	Status of Air Pollution From Mobile Sources with Recommendations for Further Action
1969	Status of Air Pollution Control in NJ, with Recommendations for Further Actions

REF: 2000 HEARING REPORT

State of New Jersey
Department of Environmental Protection

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Acting Governor

Robert C. Shinn, Jr.
Commissioner

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April 6, 2001

John Maxwell, Chairman
Clean Air Council
74 Saxonney Circle
Flemington, NJ 08822

Dear Mr. Maxwell;

Thank you very much for forwarding to me the Clean Air Council Public Hearing Report for 2000. The topic "Air Toxics in New Jersey" is timely and I wish to thank the members of the Council for their input.

Air toxics has been gaining more attention within the Department. The DEP Strategic Plan lays out specific air toxic strategies and air toxics initiatives have also been included in the Governor's budget for the past two years. As part of its results based management approach, the Department identified several Focus Areas for 2001 that are related to air toxics. One is to specifically respond to the Council's recommendations. The other air toxics related focus areas are:

Title III Clean Air Act enforcement
Develop integrated approach to reducing air toxics
Extend Emissions Statement reporting to Hazardous Air Pollutants (HAPS)
Assess the magnitude and nature of the diesel problem

In responding to the Council's recommendations, I'd like to initially address the summary and then each of your specific recommendations.

Executive Summary

Regarding your recommendation to examine the accuracy of the federal Cumulative Exposure Project (CEP) results, please note that the preliminary 1996 National Air Toxics Assessment (NATA) results were released last August and we have shifted our resources to evaluating this more recent information provided by USEPA. This assessment included some source-specific emissions information from our state permits and we have asked several local health organizations (Camden, Essex, Hudson and Middlesex counties) to evaluate sources of air toxics in their jurisdictions. We have found that this latest USEPA assessment is now good enough to identify broad strategies for air toxics control activities. We are also undertaking an expansion of our air "Emissions Statement" rule which would require most major facilities to begin reporting air toxics as part of their inventory surveys to the Department. The schedule, list of air toxics, and reporting procedures will soon be proposed by the Department.

Recommendation 1: Expansion of air toxics monitoring capabilities
DEP is implementing the Governor's Air Toxics Infrastructure Initiative, which establishes four (4) permanent air toxics monitoring sites, and develops the capability to perform short term special monitoring studies. DEP has selected locations for the permanent stations in Camden, Chester, Elizabeth and New Brunswick. The sites in Camden and Elizabeth have begun sampling for toxic volatile organic compounds such as benzene and chloroform and the Chester and New Brunswick sites should start by the end of April. Particulate toxics sampling has been added at New Brunswick and will begin in Elizabeth as soon as some sampler problems have been resolved. The other two sites are scheduled to receive their particulate samplers in April. Samplers for semi-volatile toxics have been received and will be added to all sites in April. Mercury will be added to all sites in May or June. Numerous requests have been received to perform short term monitoring studies in different communities. The Department is working on prioritizing these requests and will likely use the model results in that process. The Department believes this is in line with the Council's other recommendation (#3) on special studies.

Recommendation 2: Monitoring for additional contaminants
Through the department's Air Toxics Steering Committee, available methods and high priority toxics (based on available health information, including the CEP results) were evaluated. Researchers, EPA staff, and experts from other states (including those involved in the South Coast Air Quality Management District's air toxics monitoring study) were consulted as well. The resulting target compound list is attached and does include metals, volatile and semi-volatile organic compounds as recommended by the Council. It also includes mercury because of its special importance as a bioaccumulative toxin. Some method evaluation will have to be ongoing, as actual field experience will be necessary to demonstrate the feasibility of achieving the detection limits required for some of the compounds.

Recommendation 3: Selecting areas for special monitoring studies
The Department has already received several requests for special monitoring studies of air toxics. We will use the Council's recommendation to consider those areas in New Jersey that exceeded health benchmarks in the NATA study in prioritizing these special studies. This will also assist in planning for future work.

Recommendation 4: More validation and verification of collected data
Several initiatives have begun that will address this recommendation. The Governor's Air Toxics Infrastructure Initiative included funds for one new staff person to evaluate the air toxics monitoring data that are being collected. The Governor's most recent budget also included funding for staff to prepare an Air Toxics Inventory. The Department is also drafting changes to our Emissions Statement rule that would require reporting of specific air toxics emissions. These actions will provide the Department with the tools and resources to better evaluate the air toxics monitoring data that will be collected.

Recommendation 5: Development of new control technologies
There are several mechanisms already in place within the Air Quality Permitting Program to identify new control technologies and incorporate them into permits that are issued by the Department. These include our State of the Art Manuals that are periodically updated to reflect advances in technology, and use of the USEPA BACT/LAER Clearinghouse to identify the latest technological innovations. We have also received some funding from USEPA Region 2 to write General Permits for two groups of MACT-affected sources and to write standard permit conditions for several other groups of MACT-affected

sources. These activities will make the incorporation of up-to-date air toxics requirements in permits more routine. These activities are a good start; however, additional effort to identify the latest in air toxics control options will be necessary over the next ten years.

Recommendation 6: Sulfur reduction in fuel
The Department supported the USEPA in developing regulations for low sulfur gasoline and diesel fuel regulations, which were adopted in December 2000. The DEP permit program has had preapplication meetings with the four New Jersey refineries to plan for permitting of the modifications that will be necessary to produce lower sulfur fuels.

Recommendation 7: Investigate sources of mercury emissions
The Mercury Task Force has been actively investigating mercury emissions in New Jersey and will be forwarding a draft report to the Department soon. The final report will be forwarded to the Council.

Recommendation 8: Use of MTBE
Under the Division of Science, Research and Technology (DSR&T), the Department has prepared a report on the environmental impact of MTBE in New Jersey. This report "MTBE in New Jersey's Environment" is now available on the DSR&T's web page www.state.nj.us/dep/dsr. The Department policy at this time is not to further limit the use of MTBE in this state until the substances that replace it are known and shown not to cause environmental or public health harm.

Recommendation 9: Public education on the impact of automobiles
Both CEP and NATA results indicated that a significant portion of the risk from exposure to air toxics in New Jersey comes from on-road mobile source emissions (the bulk of which are automobiles). We agree with the Council's recommendation and would like to continue our dialogue with the Council on ideas for outreach programs. Some possibilities might be to integrate air toxics messages into our Ozone Action Day materials and to work with our Communications Office on a Web Page for Children. I believe that special efforts on communicating risks related to diesels should also be made.

Recommendation 10: Indoor air pollution programs
We agree that ignoring exposure to air toxics from indoor sources misses a large part of the problem since most people spend more than 90% of their time indoors. The Department's authority and expertise in this area is limited beyond radon and pesticides issues. Therefore, addressing this issue will require collaboration with other state agencies. We may also be able to tap into new resources becoming available from USEPA through their recently established Office on Indoor Air. Additionally we anticipate receiving information regarding the risks associated with indoor air exposure through our ongoing comparative risk project.

Recommendation 11: Full implementation of enhanced I/M
The Department is grateful for your continuing support of this very important program and will continue to keep you apprised of its status.

Recommendation 12: Cooperation with local agencies
We now have 10 air toxics projects under way in Camden, Hudson, Middlesex and Union Counties under the auspices of CEHA. As a result of these projects we are developing more accurate information on

emissions of ethylene oxide, chromium and perchloroethylene from area sources and are identifying facilities that fit the Miscellaneous Organic Chemical Manufacturing category that USEPA has included in the 1996 Air Toxics Inventory. The project report for the Middlesex County Ethylene Oxide study is now available and the other reports can be provided to you as they are completed. You can contact Debbie Pinto directly (609 292-1305) for these reports, or if there is general interest in them at the Council, we can include them in future meeting handouts.

Recommendation 13: Planning approach for air toxics
As you can see from the activities described above, we are well on our way to addressing many of the pieces of this complex issue using the planning approach which Bob Tudor described to you at the April hearing. Regarding your recommendation that the approach include acute episodic releases, our Toxic Catastrophe Prevention Program already addresses accidental episodic releases. In addition, we have a Batch Plant permitting strategy that facilities can use to identify their short term releases. Finally, the expanded Risk Screening Worksheet which was presented to you at the April hearing has been effective at flagging some peak emissions requested on permit applications that might be of concern on a 24-hour exposure basis. Finally, an initiative in the most recent budget presented by former Governor Whitman includes funding for four new enforcement positions to conduct compliance inspections at MACT-affected sources throughout the state.

Recommendation 14: Involve more programs in air toxics issues
As you can see from some of the activities described above, many programs in the Department are already involved in air toxics issues. Our Air Toxics Steering Committee, which was formed in 1987, includes representatives from Air Quality Planning, Permitting and Enforcement, plus staff from the Division of Science, Research and Technology (DSRT), Chemical Release Information and Prevention (CRIP).

I hope you find this update useful. The Department appreciates the Council's efforts, and your annul public hearing and report are valuable tools for advising the agency. This year's report was especially helpful in evaluating our air toxics program, which has been identified in the Department's strategic plan and in our state/EPA Performance Partnership Agreement (PPA) as a major goal area. The PPA will be revised this summer and the information provided by the hearing report will help us expand and revise our air toxics indicators and focus the air toxics commitments we negotiate during that process. I will continue to keep you apprised of our efforts to deal with the air toxics issue and look forward to continued interaction with the Council as the Department develops its policies and regulations.

Sincerely,

Robert C. Shinn, Jr.
Commissioner

Enclosure

c: Bill O'Sullivan
John Elston
Leslie McGeorge
Don Patterson
Dennis Hart
Debbie Pinto
Gloria Post

ELEMENTAL ANALYSIS

Aluminum
Antimony
Arsenic
Barium
Bromine
Cadmium
Calcium
Cerium
Cesium
Chlorine
Chromium
Cobalt
Copper
Europium
Gallium
Gold
Hafnium
Indium
Iridium
Iron
Lanthanum
Lead
Magnesium
Manganese
Molybdenum
Nickel
Niobium
Phosphorous
Potassium
Rubidium
Samarium
Scandium
Selenium
Silicon
Silver
Sodium
Strontium
Sulfur
Tantalum
Terbium
Tin
Titanium
Vanadium
Wolfram
Yttrium
Zinc
Zirconium

Sulfate and nitrate
Ammonium, sodium and potassium ions
Organic, elemental, and carbonate carbon
Continuous monitoring for Mercury

CARBONYL ANALYSIS

2,5-dimethylbenzaldehyde
Acetaldehyde
Acetone
Benzaldehyde
Butyr/Isobutyraldehyde
Crotonaldehyde
Formaldehyde
Hexaldehyde
Isovaleraldehyde
Propionaldehyde
Tolualdehydes
Valeraldehyde

SEMI-VOLATILE ORGANIC ANALYSIS

Acenaphthene
Acenaphthylene
Anthracene
Benz(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(ghi)perylene
Benzo(k)fluoranthene
Chrysene
Dibenz(a,h)anthracene
Fluoranthene
Fluorene
Indeno(1,2,3-cd)pyrene
Naphthalene
Phenanthrene
Pyrene

VOC ANALYSIS

1,1,1-Trichloroethane
1,1,2,2-Tetrachloroethane
1,1,2-Trichloroethane
1,1-Dichloroethane
1,1-Dichloroethene
1,2,4-Trichlorobenzene
1,2,4-Trimethylbenzene
1,2-Dibromoethane
1,2-Dichloroethane
1,2-Dichloropropane
1,3,5-Trimethylbenzene
1,3-Butadiene
Acetone
Acetonitrile
Acetylene
Acrylonitrile
Benzene
Bromochloromethane
Bromodichloromethane
Bromoform
Bromomethane
Carbon Tetrachloride
Chlorobenzene
Chloroethane
Chloroform
Chloromethane
Chloromethylbenzene
Chloroprene
Cis-1,2-Dichloroethene
cis-1,3-Dichloropropene
Dibromochloromethane
Dichlorodifluoromethane
Dichlorotetrafluoroethane
Ethyl Acrylate
Ethyl Tert Butyl Ether
Ethylbenzene
Hexachloro-1,3-Butadiene
m,p-Xylene
m-Dichlorobenzene
Methyl Ethyl Ketone
Methyl Isobutyl Ketone
Methyl Methacrylate
Methyl Tert-Butyl Ether
Methylene Chloride
n-Octane
o-Dichlorobenzene
o-Xylene
p-Dichlorobenzene
Propylene
Styrene
Tert-Amyl Methyl Ether
Tetrachloroethylene
Toluene
trans-1,2-Dichloroethylene
trans-1,3-Dichloropropene
Trichloroethylene
Trichlorofluoromethane
Trichlorotrifluoroethane
Vinyl Chloride