APPENDIX C

INTEGRATED URBAN AIR TOXICS STRATEGY

CAA SECTIONS 112(k), 112(c)(3) and 202(l)

REGULATION STATUS

On 19 Jul 99 (64 FR 38705) EPA published the first of two reports on their Integrated Urban Air Toxics Strategy (UATS). The second report is planned for later this year. The UATS by itself does not automatically result in regulation or control of emissions. EPA published a fact sheet for the UATS.

Background

This strategy is developed under the authority of CAA §§ 112(k), 112(c)(3). Because mobile sources are an important contributor to urban air toxics, actions under §202(l) are included. Some of the greatest health risks affecting the most people are in urban areas because of high concentrations of people located near numerous sources of emissions. Because 80% of the population lives in urban areas, urban air toxics may pose a significant public health problem. Also, minority and low income communities are often located close to urban industrial and commercial areas, which increases the likelihood of these subgroups' exposure to HAPs.

EPA's baseline national emissions inventory indicates that the vast majority of HAP emissions are within counties with urban areas. A greater variety of HAPs are emitted from multiple sources present in urban areas, than from the more limited number and variety of sources present in rural areas. This is important when considering the possible synergistic effects of multiple HAPs. Many of these HAPs are emitted at ground level from area or mobile sources where people are more likely to be exposed by them.

Public Health Implications of 1990 Air Toxics Concentrations across the United States is one of the first studies to demonstrate the urban air toxics problem. The study showed that nationwide estimated HAP concentrations in urban areas exceeded benchmark concentrations in a majority of these areas. EPA modeled ambient HAP concentrations on a national scale for the Cumulative Exposure Project which is another study that suggests that HAP exposures are prevalent nationwide. These estimated concentrations that are greater than risk-based concentrations should be viewed as indicators of potential public health problems and not as a characterization of ***actual*** health risks.

The CAA statutory requirements are:

§§112(c)(3) and 112(k):

- Develop a research program on air toxics, including research on the health effects of urban HAPs. Develop monitoring and modeling improvements to better identify and address risk in urban areas.

§112(k)(3)(B)(ii) and 112(c):

- Identify at least 30 HAPs from area sources in urban areas that present "the greatest threat to public health."

- Identify the area source categories or subcategories emitting the 30 worst HAPs and assure that 90 percent or more of the aggregate emissions are subject to standards under 112(d).

§112(k)(3)(C):

- Provide a schedule for a strategy to substantially reduce risks to public health (including a 75 percent reduction in cancer risk attributable to 1990 exposures to HAP emitted by all stationary sources) using all EPA and State/local authorities.
- Implement the strategy and achieve compliance with all requirements within 9 years of enactment.
- Encourage and support State/local programs in reducing risks within individual urban areas.
- Provide a Report to Congress at intervals not later than 8 and 12 years after enactment, on actions taken to reduce the risks to the public health.

§202(l):

- Study the need for and feasibility of controlling emissions of toxic air pollutants associated with mobile sources.
- Promulgate regulations containing reasonable requirements to control HAP from motor vehicles or motor vehicle fuels.

The UATS considers major, area and mobile sources even though the CAA singles out area sources to reduce urban air toxics. Area sources are not the only contributors to toxic air pollutants in urban areas and are not the only sources of concern to the public. EPA will be using a baseline that uses 1990-1993 data for the first National Toxics Inventory (NTI) that was compiled in accordance with the National Air Toxics Assessment (NATA). The NATA is continually improved and is based on emissions inventories, ambient air quality monitoring and modeling and depends on data availability. EPA has a draft 1996 NTI which will further develop the NATA.

In addition to the UATS, EPA will consider reductions in HAPs in urban areas resulting from the overall Air Toxics Program, including MACT standards for major sources, residual risk standards, mobile source emission controls and measures taken to attain the national ambient air quality standards.

SUMMARY OF STRATEGY

There are four interrelated components of the UATS.

1. Standards. The first component includes EPA, State, local agency, and Tribal regulatory tools and programmatic activities for source-specific and sector-based standard setting which contribute to reductions in emissions of air toxics from major, area, and mobile sources.

2. Initiatives. The second component of the UATS involves local and community-based initiatives to focus on multi-media and cumulative risks within urban areas.
3. Assessment. The third component is the urban component of the NATA. The NATA will identify the pollutants and sources that contribute to any failures in meeting risk reduction goals.
4. Outreach. The fourth component is communicating risk through education and outreach to the public to ensure EPA's efforts are responsive to stakeholder involvement.

The following timeline outlines EPA's goals in meeting the objectives of these four components.

1999
- Publish the UATS, including the urban HAPs list and the area source category list.
- Issue the first UATS report to Congress under section 112(k)(5).
- Complete 1996 NTI update.
- Begin State/local/Tribal stakeholder communication and information exchange on implementing the UATS.
- Propose motor vehicle and fuel standards under section 202(l).

2000
- Complete initial national and urban scale assessment.
- Complete motor vehicle and fuels standards development under section 202(l).
- Start development of additional area source standards.

2002
- Complete 1999 NTI update.

2003
- Complete 1999 assessment.
- Finalize source category list.

2004
- Promulgate standards for the area source categories newly listed in the UATS.

Urban Area Hap List

188 HAPs were evaluated for health effects using three separate analyses of the 1990-1993 NTI. The list may be changed when the 1996 NTI becomes available, and subsequently thereafter as updated information is evaluated. The results of these analyses were compared using specific criteria in order to identify the urban HAPs. The three analyses relied on a variety of information types including toxicity information, emissions estimates, ambient monitoring, and air quality modeling. Analyses were extensively peer reviewed and evaluated by experts outside of EPA and the general public.

Table 1 identifies 33 HAPs, that were narrowed down from the 188 HAP list, that on a national scale pose the greatest threat to public health in the largest number of urban areas. This list includes not only the emissions from area sources, but also includes emissions from major sources. Included among the 33 HAPs are the 30 HAPs with the greatest emission contributions from area sources.

Analysis 1: Risk-related ranking indices.

HAPs were ranked by combining surrogates for toxicity with surrogates for exposure into ranking indices. The surrogates for toxicity were risk-based concentrations (RBCs) for inhalation or risk-based doses (RBDs) for ingestion. The RBCs and RBDs were derived from acute and chronic (cancer and non-cancer) health-based reference values.

Types of information used as surrogates for exposure included measured ambient concentrations and yearly emission estimates from area, major and mobile sources in all urban areas nationwide. To address the potential for certain HAPs to pose significant risks of exposure through pathways other than inhalation (primarily by consuming food with accumulated HAPs), one set of indices also incorporated measures of bioaccumulation potential. As described in more detail in the technical support document, a total of seven separate indices were calculated using these different types of toxicity and exposure information. Lack of the requisite data prevented all seven indices from being calculated for all of the 188 HAPs. The indices were combined into a single HAP ranking.

Analysis 2: Review of existing risk assessments and hazard rankings.

Air toxics risk assessments or hazard rankings conducted previously by EPA staff, State agencies or others were reviewed. EPA selected 14 of the available studies for use in this analysis, because they were sufficiently broad in the pollutants evaluated. They included area sources of HAPs and focused on the risks presented in urban areas. Each study provided a risk-based ranking of HAPs, with separate rankings for cancer and, when available, other health effects. The rankings within each study were converted to a scale common to all of the studies, and the values were summed across the studies, providing a total score for each HAP. Because section 112(k) places special emphasis on area sources of HAPs, scores were developed both for studies that considered combined emissions from major, area, and mobile sources, and for studies that considered emissions from area sources alone. From this analysis, EPA identified those HAPs that, when compared across studies, consistently ranked high.

Analysis 3: Cumulative Exposure Project.

The CEP was initiated, in part, to characterize the magnitude, extent and significance of airborne HAP in the U.S. Computer modeling was used to estimate outdoor concentrations nationwide using a 1990 national emissions inventory compiled for 148 pollutants from major, area and mobile sources. The estimated outdoor concentrations for 119 HAP were compared to health-based benchmarks. The benchmarks for potential cancer effects were set at HAP concentrations which, if

experienced throughout a lifetime, are predicted to be associated with an upper bound excess cancer risk of 1-in-1 million. The benchmarks for potential health effects other than cancer were set at exposure concentrations for each HAP which, if experienced over a lifetime, are considered to have no significant risk of adverse noncancer effects. The study looked at more than 60,000 census tracts in the continental U.S. Census tracts vary in size but typically contain a population of approximately 4,000.

Results should be viewed as an indicator of potential hazard and not as a characterization of actual risk because the CEP does not incorporate other aspects of exposure modeling, such as differences in concentrations in various micro environments, indoor air; and individual commuting patterns.

The CEP indicates that HAP exposures are prevalent nationwide; and for some HAP in some locations, the concentrations are significant. Concentrations of eight HAPs (benzene, carbon tetrachloride, chloroform, ethylene dibromide, ethylene dichloride, formaldehyde, methyl chloride, and bis(2-ethylhexyl)phthalate) appear to be greater than the lifetime excess cancer risk-based benchmarks (1-in-1 million lifetime individual excess cancer risk) in all of the census tracts. This is primarily because of background concentrations (i.e., airborne levels occurring as a result of long-rang transport, resuspension of historic emissions, and natural sources). These concentrations are not just from localized, current, anthropogenic (manmade) emissions. Current anthropogenic emissions, however, appear to contribute to concentrations of at least two HAP (benzene and formaldehyde) above the associated benchmark in up to 90 percent of the census tracts. Further, there are 28 HAP for which estimated concentrations were greater than the associated benchmark in a larger number proportion of urban areas than rural areas. In a much smaller number of locations, concentrations of certain HAP were estimated to be more than a factor of 100 greater than the corresponding cancer and noncancer based benchmark.

Table1: Urban Area HAP List	
acetaldehyde	formaldehyde
acrolein	hexachlorobenzene
acrylonitrile	hydrazine
arsenic compounds	lead compounds
benzene	manganese compounds
beryllium compounds	mercury compounds
1,3-butadiene	methylene chloride (dichloromethane)
cadmium compounds	nickel compounds
carbon tetrachloride*	polychlorinated biphenyls (PCBs)
chloroform	polycyclic organic matter (POM)
chromium compounds	quinoline
coke oven emissions*	dioxin
1,2- dibromoethane*	1,1,2,2-tetrachloroethane
propylene dichloride	tetrachloroethylene (perchloroethylene)
1,3-dichloropropene	trichloroethylene
ethylene dichloride (1,2-dichloroethane)	vinyl chloride
ethylene oxide	

Urban Area Source Category List

EPA has adopted a two-step approach in developing a source category list for regulation in accordance with the UATS.

First, EPA identified area sources that contribute to emissions of the 30 area source HAPs that are subject or will be subject to a NESHAP. EPA identified the percent contribution to the total area source emissions for each of the 30 area source HAPs. These categories are shown in Table 2.

Second, EPA then added only those area source categories that contribute at least 15 percent of the total area source emissions of any of the individual area source HAPs to the list. These categories are shown in Table 3.

EPA has been tasked with listing those source categories representing 90 percent of the emissions of each of the 30 area source HAPs, but because of uncertainties in emissions data, EPA adopted the criterion in the second step to account for uncertainties. Since this first stage of area source categories contribute at least 15 percent, EPA is confident they add real contributions to the total area source emissions of a particular area source HAP.

EPA does intend to eventually regulate 90% of urban HAPs. In the mean time, EPA will continue to complete the list in stages, adding to, deleting from, or shuffling the list as they gather more and improved data. EPA will be conducting an initial national risk assessment in the spring of 2000 that will be used in part to prioritize which standards to pursue first. This initial assessment will use the much better-developed 1996 NTI.

Table 2: Area Source Categories Already Subject to Standards or Which Will Be Subject to Standards

Chromic Acid Anodizing	Industrial Boilers
Commercial Sterilization Facilities	Institutional/Commercial Boilers
Other Solid Waste Incinerators (Human/Animal Cremation)	Medical Waste Incinerators
Decorative Chromium Electroplating	Municipal Waste Combustors
Dry Cleaning Facilities	Open Burning of Scrap Tires
Halogenated Solvent Cleaners	Secondary Lead Smelting
Hard Chromium Electroplating	Stationary Internal Combustion Engines
Hazardous Waste Combustors	Portland Cement Manufacturing

Table 3: New Area Source Categories Being Listed	
Cyclic Crude and Intermediate Production	Municipal Landfills
Flexible Polyurethane Foam Fabrication Operations	Oil and Natural Gas Production
Hospital Sterilizers	Paint Stripping Operations
Industrial Inorganic Chemical Manufacturing	Plastic Materials and Resins Manufacturing
Industrial Organic Chemical Manufacturing	Publicly Owned Treatment Works
Mercury Cell Chlor-Alkali Plants	Synthetic Rubber Manufacturing
Gasoline Distribution (Stage I)	

As previously stated, the current list of area source categories does not include categories representing 90 percent of the emissions of each of the 30 area source HAPs. The current list meets the 90-percent or greater requirement for 11 of the 30 area source HAPs. For 10 other HAPs, the list accounts for at least 80 percent of the emissions, and for ethylene dichloride the list accounts for approximately 78 percent of the emissions. Improved inventory data may demonstrate that the current list of area sources already meets the 90-percent requirement for some of these HAPs. The remaining HAPs on the list represent less than 75 percent of the emissions of the 30 area source HAPs: arsenic compounds, cadmium compounds, chromium compounds, hexachlorobenzene, lead compounds, manganese compounds, nickel compounds, and polychlorinated biphenyl.

In the case of the metal compounds for arsenic, cadmium, chromium, lead, manganese and nickel, EPA ascertains that enough new area source categories are not listed that address the emissions from these area source, metal HAPs. There tend to be numerous source categories, each contributing only a small percentage of the metal HAPs. In many cases, this is because certain source categories have already reduced emissions due to other control programs in place. Because these pollutants can have significant health effects, EPA is developing a separate strategy to specifically address emissions of these metals.

EPA is evaluating the source categories Table 4 for possible future listing (current data indicate that each of the source categories contributes five to twelve percent of area source emissions of one or more of these metal HAPs):

Table 4: Potential Area Source Categories to be Listed
Sewage Sludge Incineration
Aluminum Foundries (castings)
Steel Foundries
Secondary Copper Smelting
Stainless and Nonstainless Steel Manufacturing - Electric Arc Furnaces (EAF)
Iron Foundries
Plating and Polishing
Cadmium Refining and Cadmium Oxide Production
Autobody Refinishing Paint Shops (called Paint Applications in the baseline inventory)
Pressed and Blown Glass and Glassware Manufacturing.

National vs. Local Scope of Area Source Categories

EPA is concerned that applying standards only in the urban areas could negatively impact economic opportunities in the urban areas and could encourage urban sprawl. EPA is also concerned about the disproportionate public health risk for people, particularly sensitive populations such as children, in smaller cities or rural areas that might be located near area sources. However, it may be more practical and appropriate to limit the applicability of certain area sources to urban areas. EPA will make a case-by-case determination for each area source rule as to whether it apply nationally or only in urban areas. However, it is anticipated that most area source rules will apply nationally.

Title V

EPA will specify in each urban area source rule whether area sources are subject to, or exempt from, Title V permitting.

Area Source Standard Development

EPA will develop standards for area source categories shown in Table 2 along with MACT standards under development when practical. In cases where a MACT standard is already (or soon to be) proposed, EPA will have to develop a separate

rule. In the cases where a standard is already promulgated, EPA will coordinate the need for additional regulation through assessments under the section 112(f) residual risk program.

EPA will pursue a tiered approach that will consider three standard setting processes. The three tiers of standard setting processes that will be considered are:

Tier 1 - MACT standard process.

EPA will set MACT standards in accordance with §112(d)(3) for those area sources that pose the greatest risk and for which a technology is appropriate.

Tier 2 - Source category specific Generally Achievable Control Technology (GACT) standard process.

EPA expects most sources will be subject to GACT.

Tier 3 - Flexible GACT process.

EPA is allowing for flexible requirements that would apply to several area source categories where more flexibility is appropriate (e.g., where there are very few area sources, they are confined to a limited geographic area or areas, or they contribute to localized public health or environmental risks). EPA might develop general requirements such as a process rule similar to section 112(g), which would be applicable to area sources in several source categories. These general requirements could outline procedures for determining what constitutes GACT. In this way, States, local governments, and Tribal agencies could elect to develop GACT for the area sources under EPA review. The timeline is as follows.

2004: Promulgate newly listed area source standards.

2006: Promulgate additional area source standards to meet the 90 percent requirement.

2009: Promulgate all remaining area source standards necessary to meet the 90-percent requirement.

2012: Require compliance with the urban air toxics.

Motor Vehicle Standards and Regulatory Schedule

EPA is examining mobile source contributions to urban air toxics health risks. In accordance with §202(l), EPA will promulgate national regulations on motor vehicles and their fuels. EPA released the "Motor Vehicle-Related Air Toxics Study" in 1993. The study provides cancer risk estimates for several air toxics: benzene, formaldehyde, acetaldehyde, 1,3-butadiene, and diesel particulates.

EPA is also investigating the health risks particularly associated with diesel exhaust which primarily originates from mobile sources. Although diesel exhaust is not specifically listed as one of the 188 HAPs, diesel exhaust includes many HAPs, including chemicals that fall into the group of polycyclic organic matter (POM) chemicals as well as some HAP metals and VOCs. EPA is considering listing diesel exhaust as a HAP. The particulate matter nature of diesel exhaust is of particular

concern. Diesel engines in highway and nonroad mobile sources are numerous and widespread. Heavy-duty highway and nonroad diesel engines are the largest sources of diesel exhaust emissions.

From these investigations EPA is developing regulations that will reflect the greatest amount of emissions reductions that can be achieved considering various factors including availability and cost, and will at a minimum address benzene and formaldehyde emissions. Mobile source rules will be the earliest of rules to be promulgated under the UATS.

EPA is also considering the HAP emissions reduced from rules developed under §202(a) (motor vehicle controls) and §211 (fuel controls) to help achieve the goals under the UATS. Existing rules developed under these sections already limit many HAP emissions from motor vehicles and their fuels. Under these sections, EPA recently proposed new light-duty "Tier 2" emission standards and gasoline sulfur controls and announced an Advanced Notice of Proposed Rulemaking for diesel fuel control. The following is the timeline.

1998: ➢ Complete risk analysis from mobile sources.

1999: ➢ Propose standards.

2000: ➢ Issue final standards.

Indoor Environments Program

The Indoor Environments Program is relevant to the UATS as people spend 80 to 90 percent of their time indoors. Outdoor air is brought through infiltration and mechanical ventilation and there are also many sources of air toxics indoors. EPA will assess the current information on indoor emissions and air concentrations of air toxics, and will use the data to estimate exposure to indoor air toxics. The Indoor Environments Program is a non-regulatory program.

State and Local Initiatives

Public health must be evaluated at the local level because there are many local factors that influence risks. The types of sources, activity patterns, and meteorology, local fish and other food consumption patterns, and motor vehicle density vary from city to city.

State and local agency programs to reduce public health risks (cancer and noncancer - chronic and acute) in individual urban areas will be encouraged and are the most appropriate authorities to address such variable risks. There are a large variety of State and local programs currently in place that have accomplished and continue to accomplish reductions in HAP. State and local programs incorporate a variety of mechanisms to control HAPs including both control technology requirements and risk based standard setting. HAP reductions may also be achieved through reductions made through VOC, PM or lead regulations developed under §110 or subpart D to meet the National Ambient Air Quality Standards.

EPA will assist State and local agencies to continue their efforts in HAP reductions in the following way:

- Provide regulations, technical support and guidance, and/or other support as necessary to State and local agencies to ensure that there are substantial reductions in the public health risks in each urban area.
- Provide a mechanism/incentives to encourage the development of State and local requirements and programs.
- Set priorities among urban areas and source categories.
- Provide information to the public on HAPs and potential risks in urban areas.
- Facilitate a focus on areas with disproportionate impacts and greatest risks.
- Provide flexibility in implementing the national standards.
- Provide a balance between the need for flexibility for States and local agencies with existing programs with the need to provide a program for those States where Federal requirements are necessary.

Integrating State and local programs within the scope of the UATS is in its very early stages. EPA is in the process of aligning stakeholders over a six month time period to develop a plan for implementing State programs. EPA is considering a number of options including: allowing agencies to either develop and substitute their own requirements for an existing Federal program, or, if they wish, to simply adopt and implement a risk reduction program designed by the EPA.

Alternatively, EPA could define the details of an acceptable risk reduction program by promulgating a set of minimum elements that any local risk reduction program - whether implemented by EPA or a State, local or Tribal agency - must contain.

EPA may also just require that the goals of the UATS are met. Progress would then be measured against the mandatory goals of the CAA.

Stakeholder Involvement

State, local, and Tribal governments. For reasons stated above, State, local, and Tribal agencies will need to play an active role in tailoring local approaches to reduce risks in urban areas. EPA will be holding a series of meetings with State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials (STAPPA/ALAPCO) to develop a plan for the most efficient and effective interaction among regulators. EPA will also meet with other regulatory partners including Tribal leaders and city mayors to help shape the coordination process. In conducting urban scale assessments, EPA will work with local communities as appropriate to characterize the air toxics emissions within a community (through monitoring and emission inventories), estimate the risks associated with these emissions, and identify actions which could be taken to reduce air toxics.

Environmental justice communities**.** The cumulative impact of multiple emission sources on minority populations and low income populations in urban areas is of special concern. The UATS will help identify and plan actions to decrease emissions that affect these communities. EPA is already coordinating with the National Environmental Justice Advisory Council (NEJAC) to establish mechanisms to work with communities to help solve urban air toxics problems. EPA plans to form round tables and panels as a means to involve communities, and other stakeholders, including representatives from universities and hospitals to define roles and responsibilities for Federal and State, local and Tribal agencies in implementing the UATS.

Public health groups and environmental groups. The UATS will also focus on susceptible groups like children and seniors and similarly form round tables and panels to define roles and responsibilities for Federal and State, local and Tribal agencies in implementing the UATS.

Non-Cancer Goals

Assessing the cancer risk in urban areas is a continuing challenge. The goal of achieving a 75 percent reduction in cancer incidence from 1990 levels is based now only on qualitative assessments correlating to HAP reductions measured since 1990. More quantitative methodologies will need to be determined. Noncancer risks will also need to be addressed. There are not easily quantifiable measures for assessing health risks other than for cancer. The CAA does not establish a numerical goal for reducing effects other than cancer. Also, there is incomplete knowledge on the synergistic or antagonistic effect of multiple pollutants. EPA has yet to define non-cancer goals that are consistent with the CAA.

Risk Assessments

EPA plans to conduct risk assessments reflecting the National Academy of Sciences Risk Paradigm set forth in 1983. EPA will conduct an initial risk assessment in early 2000 using baseline data from the 1990-1993 NTI. The NTI will be updated every 3 years, and EPA will conduct risk assessments to coincide with these revisions. The first assessment will have limited data, and will lack source-specific information to support air quality modeling. Future assessments, will not be limited in this way as emission inventory gathered for the 1996 NTI will include information necessary for modeling.

Monitoring eventually will become an important part of risk assessment activities.

Tracking Progress

EPA plans to track progress in reducing estimated cumulative risks from air toxics in urban areas by relying on estimates of health risk rather than by directly observing reductions in adverse health impacts in human populations using the aforementioned risk assessments. Estimates are necessary because of the long latency period for cancer, the high background rate of human cancer from all sources,

and complexities involved in attributing various non-cancer health effects to specific environmental causes.

First, EPA will develop an estimate of progress that has already been made with air toxics regulations using the 1990 base year.

Second, the initial risk assessment will provide basic information for prioritizing HAPs and stationary and mobile source category regulation.

Third, the initial risk assessment will provide the most current picture of inter-urban and demographic disparities in risk, and will provide insight on more refined analyses that may be appropriate to identify types of sources associated with particularly high risk levels.

Fourth, EPA will use the information from the initial assessment to develop a more complete and quantitative goal for a "substantial" reduction in non-cancer risk.

Finally, EPA will use the initial assessment to compare different hazard- and risk-based approaches.

The initial assessment will address all urban areas and will address as many HAPs as the data will support but will include at least the 33 urban HAPs and diesel PM. EPA plans to consider inhalation and multipathway exposures as data permits.

EPA then plans to conduct periodic assessments that build on the results of the initial risk assessment to measure progress.

Air Quality Monitoring

As stated above, monitoring will be an important part of risk assessments. EPA is working with States to design and implement a national air toxics monitoring network that will support the aforementioned risk assessments. Currently EPA relies on emissions inventories, but in order to base air toxics programs on sound science, and to deal credibly with the issues of background concentrations, monitoring data will be needed to conduct good assessments.

Existing networks of air toxics monitors are currently limited and for the most part, designed for purposes other than to monitor air toxics. Air toxics monitoring is also very expensive.

The monitoring program must:

- Measure pollutants of concern to the overall air toxics program and the UATS.
- Use scientifically sound monitoring protocols to ensure nationally consistent data of high quality.
- Collect a sufficient amount of data to estimate annual average concentrations at each monitoring site.
- Complement existing national and State/local monitoring programs.
- Reflect "community-oriented" (i.e., neighborhood-scale) population exposure, including inhalation and non-inhalation exposure.

- Represent geographic variability in average ambient concentrations.

Schedule

State and local programs govern existing Photochemical Assessment Monitoring Stations (PAMS) sites, or planned particulate matter (PM) chemical speciation sites. These sites provide coverage of both the largest metropolitan areas and neighborhood-scale sites. EPA will maximize the use of both of these sites. If these PAMS sites prove inadequate, EPA will then upgrade them. EPA then plans to increase the monitoring network to cover more urban and rural areas. Where necessary, EPA will place other fixed-site monitors in areas that may be subject to localized high concentrations of air toxics. Temporary or mobile monitors may be used to evaluate these areas. This monitoring network will also be expected to accumulate data to be used under the Great Waters Program. EPA projects the national network will include 400 sites.

Future Actions

If EPA concludes that the 75 percent reduction in cancer risk goals are not met, EPA will identify and implement additional activities necessary to meet those goals. Examples of additional actions that may be necessary to achieve EPA's goals are:

- Residual risk standards. Risks reduced as a result of residual risk MACT standards promulgated will count towards the goal of reducing the cancer risk by 75 percent.
- Additional stationary source standards. EPA may need to go beyond source-category-by-source-category approaches because of concerns about cumulative risk from numerous sources. Individual §112(d) standards may not adequately address those risks without further actions.

Research Needed

The next Integrated Urban Air Toxics Report to Congress will outline what specific research needs are required. EPA is also developing an “Air Toxics Research Strategy” which expands on the urban “research needs” chapter. This is scheduled to be published in the fall of 1999. This research strategy would reflect the needs of other elements of the air toxics program, such as the residual risk and Great Waters elements.

Health Effects Needs

Additional knowledge of both cancer and non-cancer health effects is needed. This l includes determinations of specific. HAP health reference values, such as inhalation reference concentrations, acute reference exposure values, and cancer unit risk factors will need to be updated.

Statistical methods for quantifying and reducing uncertainty in risk assessments using acute and chronic data needs further development.

Emission Characterization Needs

Methods for measuring HAPs in emissions and for monitoring the ambient and indoor air, and the environment (e.g., deposition to water) needs development.

Estimates and HAP assessments along with improved models is needed.

Exposure Characterization Needs

EPA needs improved data to better understand the potential for disproportionate impacts on those who are more susceptible to HAP exposures including minority and low-income communities along with an improved understanding of human indoor and outdoor activity patterns in urban environments, especially for children.

EPA will need to further assess multipathway exposures to foods, such as fish, vegetables and beef, contaminated by deposition of urban HAPs.

Risk Assessment Needs

The following activities related to risk assessments will need to be conducted:

- Improved risk assessment methods for chemical mixtures.
- Cost-effective control technologies for all HAPs and more effective controls for those HAPs posing residual risks even after applying currently available controls.
- A proposed test rule under Toxics Substance Control Act (TSCA) that would require testing of 21 HAPs. Dose-response assessment efforts for mobile source pollutants (such as benzene, 1,3-butadiene, and various fuel additives, including methylcyclopentadienyl manganese tricarbonyl (MMT)) and urban HAPs shown in Table 1.
- Reducing uncertainty in acute and chronic dose-response assessments through the use of statistical (and other) methods.
- Improved methods for identifying and quantifying the health effects associated with exposures to mixtures of pollutants.
- Development of a mixtures database to facilitate assessments involving more than one chemical.
- Improved air quality models, including long-range transport models, a new model of acid deposition, and a modeling system, the Total Risk Integrated Methodology (TRIM), which will provide a framework for better assessing health and ecological risks from multipathway exposure to air toxic (as well as criteria) pollutants.
- Various exposure assessment studies and methodologies.
- Identification of processes contributing to the HAP emissions from area source categories, and listing of control options and Pollution Prevention alternatives for these processes.

Other Programs That Influence Urban Air Toxics

The following programs under the CAA assist in reductions of risks from air toxics in urban areas:

- §112(d) Maximum Achievable Control Technology and Generally Achievable Control Technology Standards
- §112(i)(5) Early Reductions Rules
- §112(f) Residual Risk Program
- §112(g) Construction and Reconstruction Rule
- §112(r) Prevention of Accidental Releases
- §109 State Implementation Plans to comply with National Ambient Air Quality Standards
- §404 Acid Rain Program
- §202(l) Motor Vehicles and Fuels HAP Control Program
- §211 Fuel Requirements
- §213 Emission Standards for Nonroad Engines and Vehicles
- §219 Urban Bus Standards
- §129 New Source Performance Standards and Emission Guidelines for Combustion Sources
- §602 Protection of the Stratospheric Ozone

The following Federal laws also help diminish the threat from air toxics in urban communities.

- Toxics Substance and Control Act
- Resource Conservation and Recovery Act
- Comprehensive Environmental Response, Compensation and Liability Act
- Clean Water Act
- Federal Insecticide, Fungicide and Rodenticide Act
- Emergency Planning and Community Right to Know Act
- Pollution Prevention Act
- Waste Minimization National Plan

MILITARY SOURCES

The following source categories from the list in the Urban Area Air Toxics Strategy may affect the Services. We have not included NESHAPs or New Source Performance Standards/Emission Guidelines for rules that have already been promulgated to regulate area sources.

- Gasoline Distribution Stage I. The current NESHAP for this source category is limited to pipeline breakout stations and bulk terminals. If EPA expands this NESHAP to include area sources, then routing filling of underground tanks at gasoline service stations would be affected.
- Hospital Sterilizers. The current NESHAP for Commercial Sterilization Facilities exempts units located at medical facilities. All ethylene oxide sterilizers used at military medical facilities could potentially be affected.
- Iron and Steel Foundries. Steel Foundries. It is conceivable that a shipyard might have foundry operations that would fall in this category.
- Landfills (excluding Gas Flares). The Services have numerous landfills that could potentially be affected.
- Paint Stripping Operations. This could be a significant impact depending on how this source category is defined.
- Publicly Owned Treatment Works (POTWs). The definition of POTW in the major source rule includes Federally Owned Treatment Works (FOTWs). The Services will need to watch the development of the area source rule for potential impacts. Refer to Appendix 112P for more information.
- Industrial Boilers. The Services have many sources in this source category. Refer to Appendix 112R for more information on military sources.
- Institutional/Commercial Boilers. The Services have many sources in this source category. Refer to Appendix 112R for more information on military sources.
- Stationary Internal Combustion Engines. The Services have many sources in this source category. Refer to Appendix 112R for more information on military sources.

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