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THE MEMPHIS DEPOT
TENNESSEE

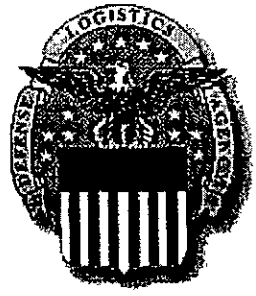
ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 481

Action Memorandum

Old Paint Shop and Maintenance Area, Parcels 35 and 28 Former Defense Distribution Depot Memphis, Tennessee

Defense Logistics Agency
Defense Distribution Depot Susquehanna Pennsylvania
Memphis Depot Caretaker Division
Memphis, TN 38114-5210



September 1999

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ACTION MEMORANDUM

Old Paint Shop and Maintenance Area

Parcels 35 and 28

Former Defense Distribution Depot Memphis, Tennessee

Site Status: Closed Industrial Area
Category of Removal: Non-Time-Critical Removal Action
CERCLIS ID: TN4 201 002 0570
Site ID: Sites 29, 32, 88, 89

I. Purpose

The purpose of this Action Memorandum is to document approval of the proposed removal action described herein for the paint shop and maintenance area at the former Defense Distribution Depot Memphis, Tennessee (Memphis Depot or Depot) located along 2163 Airways Boulevard, Memphis, Tennessee 38114. The Depot is in Shelby County.

II. Site Conditions and Background

A. Site Description

1. Removal Site Evaluation

The Memphis Depot is a former Defense Department supply depot. The Depot operated from World War II until its closure in 1997. Since closure, the Depot has been operated by the Memphis Depot Caretaker, a division of the Defense Distribution Depot Susquehanna, Pennsylvania.

As part of Base Realignment and Closure (BRAC) activities, the Depot was divided into 36 parcels to facilitate assessment of the environmental condition of the property and to determine if it can be transferred from government ownership for private- or public-sector uses.

BRAC Parcels 35 and 28, located at the southwestern corner of the Depot, contain the former maintenance shop, grease rack, sandblast, paint shop, and storage facilities. The Depot Redevelopment Corporation plans to develop the area as part of BRAC activities for future commercial and industrial uses.

Chemical contamination identified in Parcel 35 and the southern portion of Parcel 28 primarily consists of contaminated surface soil, residue, and sediment remaining from past operations in the area. Historical information, on-site inspection, and the results of surface soil sampling from the parcels suggest that the following removal actions will be conducive to permit transfer of the parcels for the planned future reuse.

- Remove residue, dust, and sediment that have accumulated in buildings associated with past operations;

- Remove areas of contaminated surface soil identified by surface soil sampling inside the perimeter fence of the Main Installation; and
- Remove potentially contaminated soil related to a sump and underground storage tank (UST) locations at the former maintenance shop and grease rack facilities.

2. Physical Location

The Memphis Depot is a 642-acre area in the central section of Memphis, Tennessee, approximately 5 miles east of the Mississippi River, 4 miles from the central business district of Memphis, and approximately 1 mile north of the Memphis International Airport. Airways Boulevard borders the Depot on the east and is the primary access to the Main Installation. Dunn Road, Ball Road, and Perry Road serve as northern, southern, and western boundaries, respectively, of the Main Installation. Figure 1 shows the general location of the Depot within the Memphis area. Figure 2 shows the configuration of the Depot and its location with respect to the surrounding streets.

The Depot is located in an area of widely varying uses. Most of the land surrounding the Depot is intensely developed. To the north of the Depot are rail lines of the Frisco Railroad and Illinois Central Gulf Railroad. Large industrial and warehousing operations are located along the rail lines in this area. A triangular area immediately to the north of the Depot, bounded by Dunn Road, Castalia Road, and Frisco Avenue, also contains several industrial facilities. Formerly a residential neighborhood, the area is characterized by small commercial and manufacturing uses with some single-family residences remaining.

Airways Boulevard is the most heavily traveled thoroughfare in the vicinity and is developed with numerous small commercial establishments. Businesses along Airways Boulevard are typical of highway commercial districts. Other commercial establishments are located to the north, south, and west of the Depot. Most are small groceries or convenience stores that serve their immediate neighborhoods.

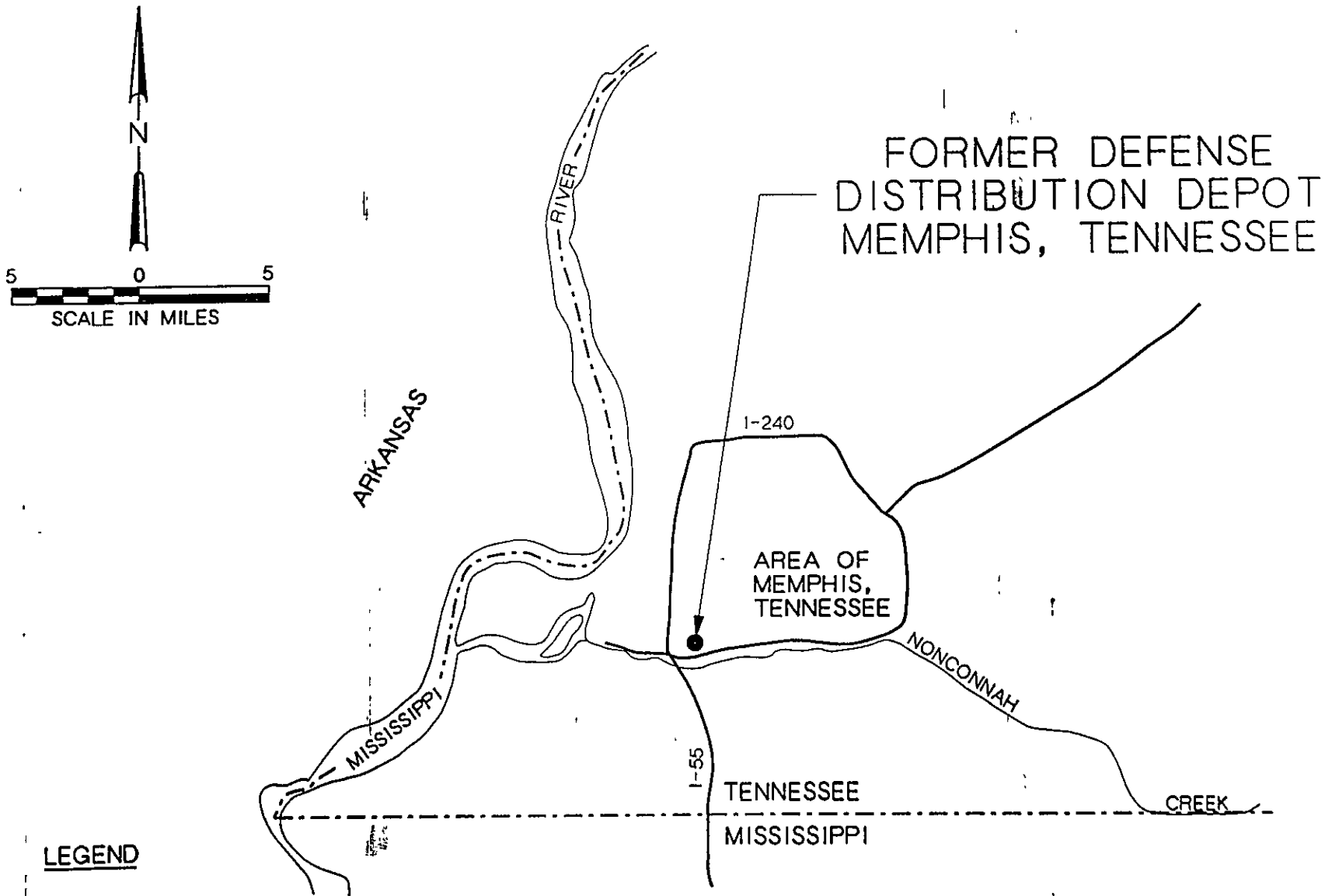
The Depot is surrounded by residential development, including single- and multiple-family residences. Numerous small church buildings and schools are located throughout the area.

3. Site Characteristics

Parcels 35 and 28 are located in the southwestern corner of the Depot (Figure 2). Approximately 7.5 acres of the 12-acre area contained in Parcels 35 and 28 are located within the perimeter fence surrounding the Main Installation (Figure 3). This area was industrial where maintenance and repair activities were undertaken. Except for the grassy area at its southern end, this portion of Parcels 35 and 28 consists of industrial buildings, concrete and asphalt pavements, and gravel surfacing.

Facilities within the Main Installation perimeter fence at this industrial area include:

- Building 1084 – A former maintenance shop, which also was used as a wood shop and a pesticide storage area;



Source: Engineering-Science, 1993

FIGURE 1
DEPOT LOCATION IN MEMPHIS METROPOLITAN AREA

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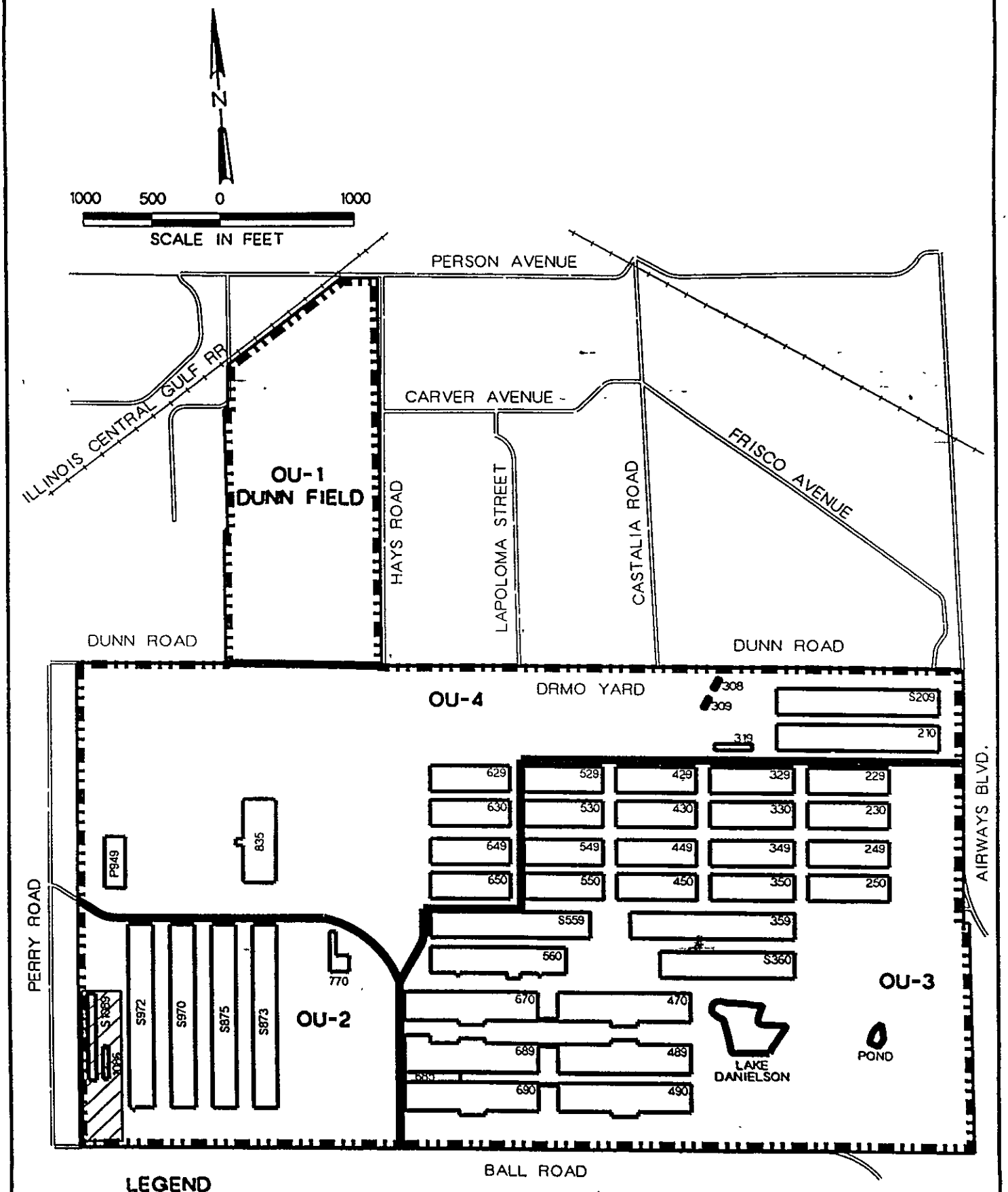

Source: Engineering-Science, 1993

FIGURE 2
LOCATION OF PARCELS 35 AND 28

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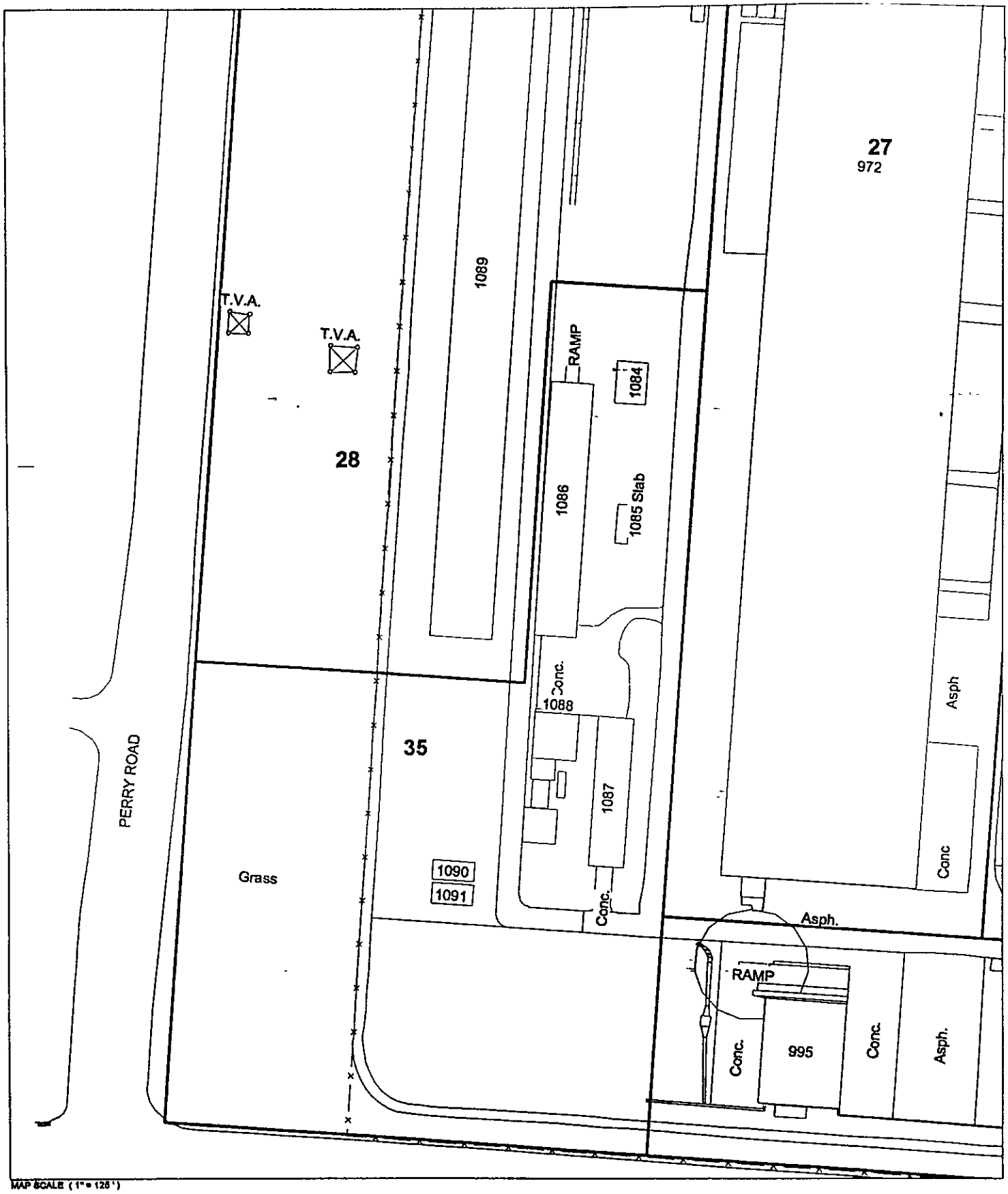

Figure 3
SITE CONFIGURATION
BRAC PARCELS 35 & 28

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- Building 1085 - A concrete slab from a former grease rack;
- Building 1086 - An industrial building formerly used as a preparation area, paint shop, and storage area;
- Building 1087 - An industrial building formerly used as a paint shop;
- Building 1088 - An industrial building with a former sandblast facility;
- Building 1089 - A partially enclosed warehouse where some sandblasting occurred; and
- Buildings 1090 and 1091 - Small Quonset huts formerly used to store paint and other supplies for paint shop operations.

The remaining 4.5 acres of Parcels 35 and 28 are located outside the perimeter fence. This area is a grassed utility corridor, which provides a buffer zone between the Main Installation perimeter fence and Perry Road.

The Depot is currently under the ownership of the Army and operational control of the Defense Logistics Agency. Parcels 35 and 28 will be transferred to the ownership of the Depot Redevelopment Corporation for reuse.

4. Release or Threatened Release into the Environment of a Hazardous Substance, Pollutant, or Contaminant

Surface soil samples (zero to 12 inches in depth) within the Main Installation perimeter fence at the industrial area have a variety of contaminants associated with the former functions of the area. The most frequently detected constituents were metals (copper, cadmium, lead, mercury, nickel, and zinc). Polycyclic aromatic hydrocarbons (PAHs) (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and phenanthrene) were also detected in significant quantities. In addition, the samples contained sparse concentrations of volatile organic compounds (VOCs) (acetone, methylene chloride, methyl ethyl ketone, and toluene); phthalates (bis(2-ethylhexyl)phthalate and di-n-butylphthalate); and pesticides (p,p'-DDE, p,p'-DDT, and dieldrin). The concentrations were distributed throughout the parcels and were not concentrated in a particular area.

Concentrations of PAHs and lead exceeding U.S. Environmental Protection Agency (EPA) Region III risk-based criteria for residential land use were detected in samples along Perry Road, within the utility corridor west of the Main Installation perimeter fence. PAHs and lead are common constituents of exhaust gases from motor vehicles. Concentrations of PAHs and lead from near-road samples adjacent to the paint spraying and sandblasting operations are elevated relative to other samples near the road but away from these operations. Therefore, although these constituents are commonly associated with burning of gasoline, it is possible that they are also associated with the paint spray and sandblasting operations. During the early stages of the removal action, additional sampling will be performed to determine if the lead and PAH in surface soil within Parcels 35 and 28 have been transported across the utility corridor toward Perry Road.

All of the industrial buildings within the fenced industrial area contain dust, residue, and sediment from their past operations. Although sampling has been minimal within the buildings, it is anticipated that constituents within the buildings will be similar to those

detected in the adjacent graveled areas. A 1993 survey of asbestos-containing materials (ACM) at the Depot identified the presence of asbestos-containing roof flashing materials on Building 1084 and asbestos-containing insulation for the heating system in Building 1087. Buildings 1086, 1087, 1088, and 1089 contained sandblast and/or paint booth facilities where lead-based paint residue may be present. Noticeable areas of scaling or peeling paint also are present in some buildings.

In addition, there are two subsurface areas within the fenced industrial area where known or suspected sources of contamination are present. The first area is the former underground storage tank (UST) location associated with the former grease rack, Building 1085. The UST, which was removed in 1989, contained waste oil, and also may have contained various other liquids containing petroleum hydrocarbons, pesticides, polychlorinated biphenyls (PCBs), and metals.

The second area is a gravel-filled sump beneath Building 1084 that drained a former maintenance pit. Potential contaminants in this area include petroleum hydrocarbons, solvents, and metals associated with the maintenance operations.

The potential release mechanisms for surface and near-surface contamination include transport of contaminated surface soil or residues by surface water runoff, off-site tracking of contaminated surface soil or residues by vehicles or personnel operating in the area, and suspension and migration of contamination as dust. There is also a potential for downward migration of contaminants from the previous UST and underground sump locations. The likely exposures to these potential release mechanisms are from dermal contact or ingestion by an on site worker. Exposure to dust from the suspension and migration of contamination is most likely when the site becomes disturbed during construction.

5. NPL Status

The Memphis Depot was placed on the National Priorities List (NPL) in October 1992, and must fulfill requirements under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP). The Depot is under the jurisdiction of the Tennessee Department of Environment and Conservation (TDEC) and EPA Region IV.

A sitewide remedial investigation and feasibility study (RI/FS) is currently being prepared for the Depot in accordance with CERCLA and NCP to evaluate human health and environmental risk, and to screen for potential remedial actions.

Proposed removal actions outlined in this Action Memorandum, however, are actions the Memphis Depot decided to voluntarily pursue to remove readily accessible chemical contamination in Parcels 35 and 28 to facilitate property transfer. Further remedial action requirements, if any, will be determined by a record of decision following the RI/FS. The proposed removal actions will not preclude remedial actions, if any are required, for other environmental media.

B. Other Actions

1. Previous Actions

UST records at the Depot indicate that removal of a 1,000-gallon underground waste oil tank and in-place closure of the underground hydraulic fluid tank for the former hydraulic lift, were done in 1989 by the Memphis District, U.S. Army Corps of Engineers. No records of how the tanks were removed or closed are available. Observations of the vertical inlet pipe for the hydraulic fluid tank, however, suggest that the UST was closed by filling it with sand, a common practice at that time. However, this has not been confirmed.

2. Current Actions

No operational or remedial actions are currently ongoing in the vicinity of Parcels 35 and 28.

III. Threats to Public Health, Welfare, or the Environment

A. Threats to Public Health or Welfare

The expected land use of the area of Parcels 35 and 28 located within the Main Installation perimeter fence is industrial and commercial. Employees working within the industrial area of Parcels 35 and 28 will be the primary individuals encountering contamination within the area.

No risk assessment was conducted for the area. Instead, detected contaminant concentrations in Parcels 35 and 28 were compared with industrial screening criteria based on background concentrations, BRAC Cleanup Team (BCT) screening values, and EPA Region III risk-based concentrations (RBCs) corresponding to a Hazard Index (HI) of 1.0 and updated to current (October 1998) values. Contaminants that exceeded the industrial screening criteria were aluminum, antimony, arsenic, benzo(a)pyrene, iron, lead, and phenanthrene. Of these, arsenic and benzo(a)pyrene are carcinogens. The remaining contaminants are noncarcinogens.

B. Threats to the Environment

There is no undisturbed natural habitat within the site. The land use is highly developed and industrial in nature, and little vegetation is present. According to the "Environmental Assessment for BRAC 95 Disposal and Reuse of the Defense Distribution Depot, Memphis, Tennessee" by Tetra Tech, no endangered species or wetlands are present in the area.

IV. Endangerment Determination

Contamination has been detected in excess of industrial screening criteria within the industrial area contained in Parcels 35 and 28. The Memphis Depot has elected to perform the following removal actions to remove readily accessible contamination so that the property may be transferred for future industrial use:

- Remove residue, dust, sediment, and incidental ACM and lead-containing materials in readily accessible areas of existing industrial buildings in Parcels 35 and 28;

- Remove surface soil to a depth of 12 inches in areas within the Main Installation perimeter fence at the industrial area of Parcels 35 and 28 that had contaminant levels exceeding the industrial screening criteria for the Depot;
- If surface soils with PAH and lead concentrations exceeding residential risk-based criteria within the utility corridor are determined to be associated with operations within Parcels 35 and 28, remove to a depth of 12 inches; and
- Sample and remove contaminated soil related to a sump and UST locations at Buildings 1084 and 1085.

These locations are shown in Figure 4.

V. Proposed Actions and Estimated Costs

A. Proposed Actions

Three alternatives were developed for meeting the removal actions described above. These alternatives include:

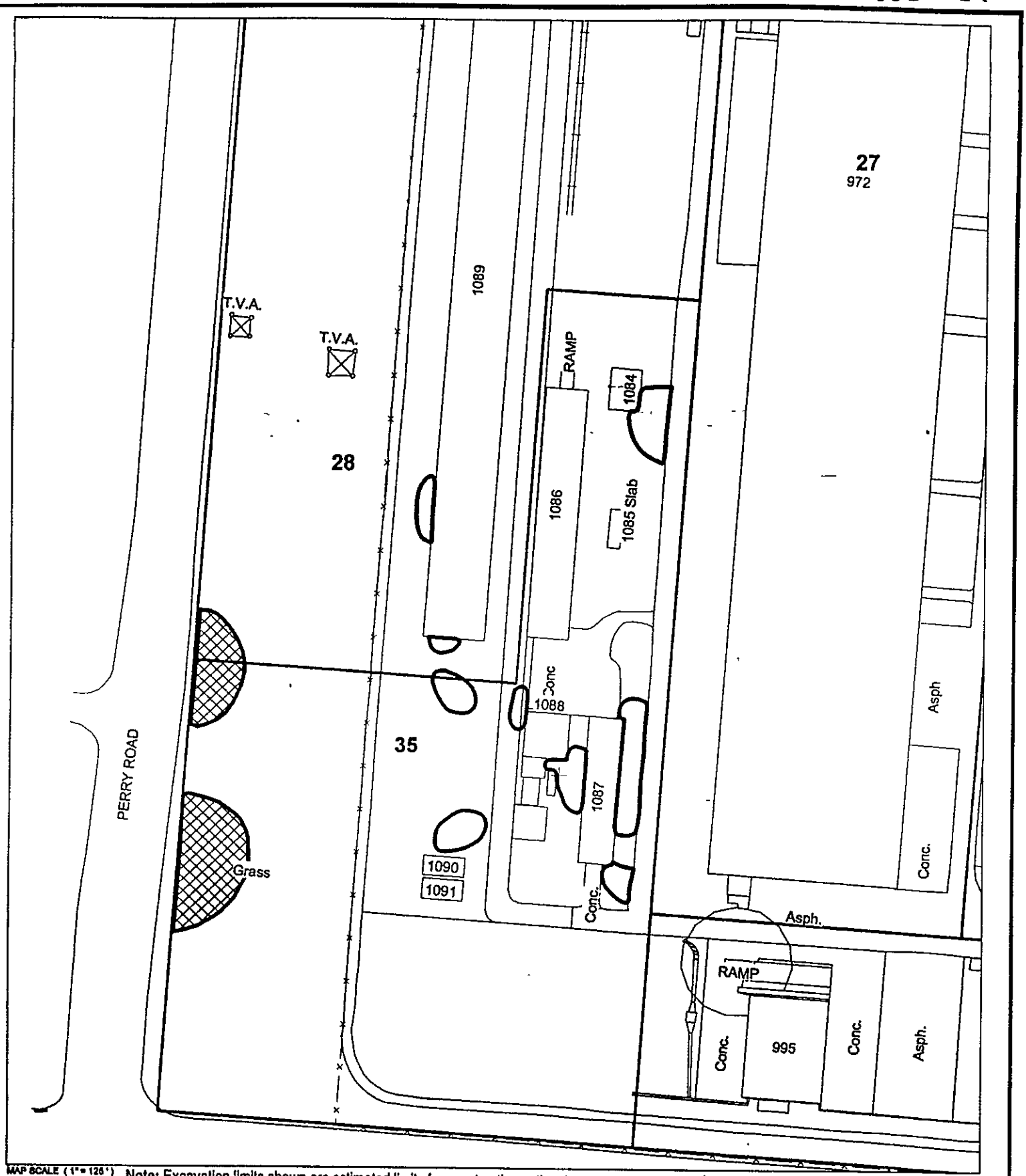
- **Alternative 1** – Decontaminate Existing Metal and Masonry Buildings and Associated Equipment for In-Place BRAC Transfer; Remove and Dispose of Wooden Structures, Contaminated Soil, and Debris;
- **Alternative 2** – Decontaminate Existing Metal and Masonry Buildings for In-Place BRAC Transfer; Decontaminate, Remove, and Dispose of Associated Equipment; and Remove and Dispose of Wooden Structures, Contaminated Soil, and Debris; and
- **Alternative 3** – Decontaminate, Remove, and Dispose of All Above-Grade Buildings and Associated Equipment and Remove and Dispose of Contaminated Soil and Debris.

Alternatives were evaluated in terms of effectiveness, implementability, cost, and the following removal action goals and objectives:

- Reduce potential risk to long-term site users to a level deemed acceptable by EPA and TDEC;
- Be technically appropriate and feasible to accomplish using commonly accepted construction practices;
- Minimize, to the extent possible, the volumes of materials that must be removed and landfilled off-site;
- Have a reasonable and acceptable cost;
- Be implemented in an expedited manner to meet BRAC parcel transfer and leasing schedules; and
- Involve minimal post-removal operational, maintenance, or monitoring requirements.

All removal action alternatives can be implemented and all can meet the stated removal action goals and objectives. There is a potential for slightly greater effectiveness with

Alternatives 2 and 3, but this is offset by the increased work scope, disposal requirements, and cost.



MAP SCALE (1" = 125 ')

Note: Excavation limits shown are estimated limits for construction-estimating purposes. Actual limits will be determined by analytical sampling and testing during construction.

N

0 62.5 125 187.5
Scale in Feet

LEGEND

Excavation Limits (Industrial)
Excavation Limits (Residential)

Figure 4
SITE CONFIGURATION WITH EXCAVATION AREAS
BRAC PARCELS 35 & 28

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Figure4.wor

Alternative 2 was initially recommended because it provides, at a reasonable cost, open and fully decontaminated buildings that could be used for a variety of purposes. Upon further consultation with the Depot Redevelopment Corporation, Alternative 1 was selected because the proposed future use requires that the existing sandblast and paint booth facilities remain in place.

1. Description of Proposed Action

The proposed action (Alternative 1) includes the following elements:

- Remove all loose dust, debris, and surface residue from the exterior of sandblast and paint booth equipment to remain in place in Buildings 1086, 1087, and 1088. Collect confirmatory samples and compare analytical results with industrial screening criteria for the Depot.
- Remove all loose dust, debris, and surface residue from the interiors of Buildings 1086, 1087, 1088, 1089, 1090, and 1091, including slabs, sumps, and drainage structures. Collect confirmatory samples and compare analytical results with industrial screening criteria for the Depot.
- Clean all loose dust, debris, and surface residue and remove and dispose of Building 1084 wooden structure and slab.
- Remove contaminated surface soil to a depth of 12 inches and perform confirmatory sampling in areas inside the fenced industrial area where previous sampling indicated the presence of chemical contaminant levels exceeding the industrial screening criteria for the Depot. Collect confirmatory samples and compare analytical results with industrial screening criteria for the Depot.
- Conduct confirmatory sampling of surface soil outside the perimeter fence along Perry Road to confirm the belief that elevated PAH and lead levels are not associated with past industrial activities in Parcels 35 and 28. Remove contaminated soil outside the perimeter fence only if the confirmatory samples suggest that this is not the case. Soil exceeding residential risk-based criteria will be removed.
- Sample and remove contaminated soil related to the sump and UST locations at Buildings 1084 and 1085. Collect confirmatory samples and compare analytical results with industrial screening criteria for the Depot.

2. Contribution to Remedial Performance

The proposed removal action will remove residual contamination (e.g., contaminated surface soil, surface residues, debris, and dust) to the extent necessary to facilitate transfer of the property for further industrial or commercial reuse. It will also remove the potential risk of subsurface contamination in identified areas (e.g., sump area and UST location at Buildings 1084 and 1085) where such soils could present a hazard for future development in those areas or a potential source of groundwater contamination.

Removal of the soil will support a No Further Action determination for Installation Restoration Program sites in Parcels 35 and 28. Evaluation of potential groundwater remedial action will be performed as part of the CERCLA RI/FS for these sites.

3. Description of Alternative Technologies

On-site and off-site treatment alternatives to landfilling may be potentially viable from a technical perspective, but the relatively small volume of soil (less than 1,200 cubic yards) and the low cost of landfill disposal (approximately $20 per cubic yard) at a local industrial landfill suggest that treatment options would not be cost-effective. As a result, no treatment alternatives to landfill disposal were considered.

4. Engineering Evaluation/Cost Analysis (EE/CA)

The proposed removal action is based on removal action requirements and an alternatives evaluation documented in the *Draft-Final Former Defense Distribution Depot Memphis, Tennessee, Engineering Evaluation/Cost Analysis (EE/CA), Old Paint Shop and Maintenance Area, Parcels 35 and 28,* dated April 1999, and information and decisions made subsequent to publication of that document. A final EE/CA document is currently being prepared to document these changes. Appendix A, Responsiveness Summary, lists all comments made by the public during the 60-day public comment period and provides the agency's responses.

5. Applicable or Relevant and Appropriate Requirements (ARARs)

The following list of ARARs was developed on the basis of the proposed scope of work for the removal action and known or suspected conditions at the site:

- Contaminated soil and debris will be screened to determine if they are characterized as hazardous waste. Waste will be characterized as hazardous if the appropriate analysis determines that the wastes are reactive, ignitable, corrosive, or toxic as described in 40 CFR 261 Subpart D.
- Applicable Occupational Safety and Health Administration (OSHA) health and safety regulations will be followed during the removal operations. Workers performing the removal will be properly trained and under appropriate medical supervision. Appropriate personal protective equipment (PPE) will be used and safe work practices will be followed.
- ACM will be packaged in leak-tight containers and disposed of in accordance with the appropriate OSHA, EPA, and Memphis/Shelby County Health Department/Pollution Control Division requirements.
- Lead-based paint will be managed in accordance with the appropriate OSHA and Memphis/Shelby County Health Department/Pollution Control Division requirements.
- PCB-contaminated materials, if any, will be managed in accordance with the Toxic Substances Control Act (TSCA). PCB-contaminated materials that contain a PCB concentration of 50 parts per million or greater will be disposed of at a TSCA-permitted incinerator or a TSCA-permitted chemical landfill.
- Soil surrounding former USTs will be removed to achieve the TDEC cleanup levels for petroleum contamination. In addition, soil will be subjected to the full scan of chemical analyses to identify other constituents that may be present. These constituents will be removed, as necessary, to the corresponding industrial cleanup standards.

- Water pollution control requirements of the federal Clean Water Act and National Pollutant Discharge Elimination System (NPDES) and applicable state and county requirements will be followed during all construction and decontamination operations.
- Applicable NCP requirements, including public comment period provisions, will be included as applicable.

6. Project Schedule

The Mobile District, U.S. Army Corps of Engineers, has procured a contractor for cleanup actions at the Depot. The removal action for Parcels 35 and 28 is scheduled to be the first action under the contract.

Current projections indicate that the work will begin during the fall of 1999. It is estimated that approximately 3 months will be required to complete the removal action once the contractor is on-site.

B. Estimated Costs

The conceptual-level cost estimate for the proposed removal action is $871,000. This cost estimate includes a direct capital cost (for example, cost for construction, construction oversight, transportation, and disposal) of $792,000 and an indirect cost (for example, fees for engineering and design, legal, and licenses) of $79,000. Indirect costs are assumed to be about 10 percent of the direct costs. Conceptual-level cost estimates are order-of magnitude cost estimates made without detailed engineering data and include estimates of major cost components and quantities, typical costs from similar work, cost curves, and scale-up and scale-down factors or ratios. It is normally expected that estimates of this type would be accurate to within plus 50 percent to minus 30 percent. The actual cost will be developed as the final design is completed and a better estimate of actual work items for the selected alternative has been developed.

No long-term operations and maintenance costs were included in the cost estimate because contaminants will be removed and no cap systems, treatment systems, etc., will be required to augment the removals.

VI. Expected Change in the Situation Should Action Be Delayed or Not Taken

As long as surface soil contamination and debris and dust in the buildings remain, there is a potential for migration of surface contaminants via surface water drainage or dust. The presence of contaminant-laden dust and residue in the buildings poses a potential hazard to people entering those buildings.

The potential for downward migration of contaminants from the old UST location at Building 1085 is dependent upon the presence and concentrations of contaminants remaining in that area. The pit area beneath Building 1084 is currently covered with a concrete slab and roof. Little, if any, migration of contaminants from that area is anticipated.

The potential for downward migration of contaminants from the old UST location at Building 1085 is dependent upon the presence and concentrations of contaminants remaining in that area. The pit area beneath Building 1084 is currently covered with a concrete slab and roof. Little, if any, migration of contaminants from that area is anticipated.

VII. Outstanding Policy Issues

The work is being funded fully by the Defense Logistics Agency. No policy issues concerning cost sharing or EPA funding are involved for the removal action.

VIII. Enforcement

The proposed removal action is a non-time-critical removal action voluntarily being undertaken by DLA. It is not an enforcement action; however, review and oversight of the removal action by TDEC and EPA are expected. Because it is a voluntary action, an Enforcement Addendum is not required.

IX. Decision

This decision document represents the selected removal action for Parcels 35 and 28 and the former Defense Distribution Depot Memphis, Tennessee, developed in accordance with CERCLA as amended, and is consistent with the NCP. The decision is based on the administrative record for the site.

Conditions at the site meet the NCP section 300.415(b) (2) criteria for a removal action and I approve the recommended removal action.

J.W. KENNEY

Captain, SC, USN

Commander

Appendix A.

Responsiveness Summary

Comments Regarding
Engineering Evaluation/Cost Analysis
Old Paint Shop and Maintenance Area
Parcels 35 and 28

Public comments on the environmental removal action proposed at the area of the Depot referred to as Parcels 28 and 35 have been requested and received. The Defense Logistics Agency placed the Engineering Evaluation and Cost Analysis report that documents and recommends a cleanup alternative into the four Depot information respositories on May 17, 1999. This is also the date that the 30 day public comment period began. This comment period was eventually extended for 30 days until July 16, 1999. During that 60 day period, 29 comments were received by DLA from the public. Several comments were made by two citizens through two separate written letters while the remaining comments were provided during a public comment meeting. There were no comments received from the public through the use of the telephone answering service set up for that purpose during the 60 day period.

Of the 29 comments, twelve are directly applicable to the proposed action. Although the remaining 17 comments are not directly applicable to the proposed action, responses are provided in the following documentation. The comments and rsponses that are directly applicable are provided first, while the other general comments and responses are provided second.

DLA as the lead agency performing this removal requested and was provided assistance from the Environmental Protection Agency Region 4, the Tennessee Department of Environment and Conservation and CH2M Hill (project consultant) in the formulation of these responses.

The following twelve comments and responses are substantive and directly applicable to the proposed removal action:

Why does environmental cleanup have to happen in order to transfer this piece of property?

This removal would probably be required regardless of leasing or transfer of this area. The interest in reusing this area has merely raised the cleanup priority of this area.

On closing federal facilities at areas that the EPA has determine require some type of remedial action, the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Section 120 (h)(3) {42 U.S.C. 9620 (h)(3)} requires the transferring federal agency to take all cleanup actions necessary to protect human health and the environment, or have all actions in place and functioning properly to the satisfaction of the EPA Administrator, before the property can be transferred.

The Depot Redevelopment Corporation (DRC) has identified this area as a priority for transfer. Under CERCLA and the National Contingency Plan, the Defense Logistics

Agency (DLA) has the authority to proceed and perform an early removal to aide the reuse of the property. Since the Remedial Investigation may find that a remedial action is required and this area has been identified as a priority for reuse, DLA has decided to propose and perform an early removal action.

In the case of this proposed removal action, there are levels of metals specifically lead, arsenic and antimony, that exceeded the EPA's Risk Based Concentrations (RBC). These RBC values are screening values that tell environmental professionals whether an area requires further evaluation or whether there is little or no environmental concern. At this area, sample results significantly exceeded the RBCs, which indicates that the outcome of the Remedial Investigation (RI) for this area would probably find that a remedial action would be required. We are currently conducting a RI, but the RI will not be complete until the end of calendar year 2000.

Why do you have to bring up the environmental standards for another company to come in even though people worked here for 50 years? Was it too dirty for them to work here?

The Defense Logistics Agency is not cleaning up this area just because another company is coming into this area to work. On closing federal facilities at areas that the EPA has determine require some type of cleanup action, the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Section 120 (h)(3) {42 U.S.C. 9620 (h)(3)} requires the transferring federal agency to take all cleanup actions necessary to protect human health and the environment, or have all actions in place and functioning properly to the satisfaction of the EPA Administrator, before the property can be transferred.

The levels of metals found in surface soils at this area of the Depot exceeded what EPA considers to be acceptable levels of risk for residents or workers, primarily through incidental exposure to those surface soils. A higher risk does not mean that there were cases of illness or worker impact from these areas, it merely means that the chance of contracting an illness is higher than the normal chance of contracting an illness.

What substances were tested for during field work to determine this area needed to be cleaned up?

Within the Parcels 35 and 28 area, surface and subsurface soil samples were analyzed for the following classes of chemicals: metals, pesticides, polychlorinated biphenyls (PCBs), polynuclear aromatic hydrocarbons (PAHs), semivolatile organic compounds (SVOCs) and volatile organic compounds (VOCs). Each of these analyses includes numerous chemicals. Analyses were performed in accordance with EPA-prescribed analytical methods. Although analyses included these numerous chemicals, Table 1-5 of the EE/CA reports only the chemicals that exceeded the screening criteria.

I request a 30-day extension.

The request was granted and the public comment period extended from June 15 until July 15, 1999.

How will we know that it is clean? Who/what will decide what is clean, what is not and what is acceptable?

The regulatory agencies, EPA and TDEC, involved with the oversight of this project will determine cleanup levels for any contaminants determined to represent an unacceptable risk. Through risk assessment calculations, we can estimate the concentrations of contaminants that can safely remain in soil. On a site-specific basis, these concentrations would be the cleanup levels as verified through rigorous sampling as the cleanup progresses. EPA and TDEC must concur that the cleanup has achieved the cleanup levels.

Did you retest? Will you retest? And will you bring that information back to the RAB?

Sampling will occur during and after the removal action to define the limits of contamination and to confirm that the contamination has been removed to the specified limits. The contractor performing the removal action will prepare documentation of the confirmatory sampling, which will be made available to the public in the Information Repositories. Once the removal is complete, a presentation will be made to the RAB summarizing the final removal action and presenting the results of the confirmation sampling.

Will you conduct this removal in a safe manner or an expedited, sloppy manner in order to transfer the property and save money?

This action will be performed in a manner that fully complies with all applicable environmental and safety related regulations. The Memphis/Shelby County Health Department, TDEC and EPA will monitor the work to ensure it is being conducted in a safe manner.

How do you know there will be no "long-term operations and maintenance"?

Since this is a soil removal action that entails the complete removal of all contaminated surface soils within the area of concern means that there will be no operation nor maintenance of an on site "treatment" system. No aspect of this proposed removal has been identified as having a long term, on-site component. After the transfer of this area to a non-federal entity, real estate monitoring activities will be conducted to ensure that the use of the property remains consistent with the approved reuse plan. The Department of Defense does not view real estate monitoring as long-term operation and maintenance. Upon the lease or transfer of this area, operations and maintenance of the industrial facilities will be the responsibility of the tenant or owner and will be done in accordance with all applicable regulations and permits.

How will a fence keep industrial contaminant levels contained when dust can transport these contaminants past the fence to the nearby residential area?

The fence is an institutional control that must be in place to prevent people from entering the industrial site to protect them not only from chemicals but also from safety hazards. There are three scenarios where people possible from the soil contamination present at this area:

- Dermal contact,
- Ingestion, and
- Dust Inhalation.

Dermal contact, ingestion of soils and dust inhalation from this area were evaluated from a worker exposure perspective due to industrial reuse. During the actual removal of the soil, dust inhalation may be a predominant risk factor. Dust control measures during this removal action will be a priority. Since that is a temporary condition, dust inhalation should not be used to determine the ultimate cleanup so long as the dust can be controlled during the removal action.

Dust will be control during the cleanup action by wetting the areas of excavation with water during all construction periods and covering any open excavation with plastic lining. Work also may be suspended during periods of high wind. The air quality surrounding the site will be monitored with a device called a "mini-ram" air sampler during construction activities. Work will cease if any exceedences of action levels are detected. Work will continue once the cause of the dust exceedance has been determined and corrected. The Occupational Safety and Health Administration sets the action limits for dust.

Alternative 1 is ridiculous and should not be allowed in order to relieve residents from this type of industrial use.

All three alternatives proposed in this EE/CA are acceptable based on the proposed future reuse of the Memphis Depot property put forth in the Depot Redevelopment Corporation's (DRC) "Memphis Depot Redevelopment Plan," dated May 1997. The proposed future reuse for the parcels included in this EE/CA is light industrial. Future reuse of the Memphis Depot property is the responsibility of the DRC. The Army recognizes the DRC as the organization responsible for implementing property reuse as specified in the redevelopment plan.

To facilitate reuse, the DRC informs the BRAC Cleanup Team (BCT) when parcels become priorities for reuse. While the DRC's priorities and the proposed reuse drive the BCT's decision making to a certain extent, future reuse decisions are made by the DRC. The DRC has requested that the equipment and facilities in these parcels remain in place for future reuse. Therefore, Alternative 1 provides the appropriate level of cleanup necessary to transfer the parcels for light industrial reuse while fulfilling the DRC's requirement to leave the equipment and facilities in place.

If a future user should continue the operation of these facilities as paint booths and a sand blast booth, the future tenant/buyer will be required to comply with all applicable local, state and federal environmental regulations. Future tenants/buyers will also be required to obtain the necessary permits and be subject to periodic inspections by the Memphis/Shelby County Health Department, TDEC and EPA.

Alternative 1 achieves the cleanup requirements under CERCLA and the objectives of the Memphis Depot Redevelopment Plan. Any questions or concerns regarding the redevelopment plan or future reuse should be directed to the Depot Redevelopment Corporation at (901) 942-4939.

Alternative 3 is the most appropriate because the value of a clean environment for residents living in the area is priceless compared to the cost of the clean up.

All three alternatives proposed in this Engineering Evaluation/Cost Analysis (EE/CA) are acceptable based on the proposed future reuse of the Memphis Depot property put forth in the Depot Redevelopment Corporation's (DRC) "Memphis Depot

Redevelopment Plan," dated May 1997. The proposed future reuse for the parcels included in this EE/CA is light industrial. Future reuse of the Memphis Depot property is the responsibility of the DRC. The Army recognizes the DRC as the organization responsible for implementing property reuse as specified in the redevelopment plan.

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Alternative 1 achieves the cleanup requirements under CERCLA and the objectives of the Memphis Depot Redevelopment Plan. Any questions or concerns regarding the redevelopment plan or future reuse should be directed to the Depot Redevelopment Corporation at (901) 942-4939.

Samples should have been taken deeper than 12 inches below ground surface to see if they could get into the groundwater.

Subsurface samples were taken from 12 soil borings located within Parcels 35 and 28 and analyzed for the chemicals listed in the response to Comment 9. From these 12 soil borings, samples were collected from approximately the 5 to 8 foot interval, 20 foot interval and 40 foot interval. Groundwater wells in Parcels 35 and 28 have been sampled five times since 1995. The metals antimony, chromium and lead have been detected in groundwater but have neither been consistently detected nor detected at concentrations that would indicate leaching through the soil to groundwater.

<u>The following comments were more general in nature or dealt with the process of the public involvement for this action and were not directly applicable to the proposed removal action:</u>

If the Depot had not closed, would you still be doing environmental cleanup? And if so, what kind?

Yes. The levels of metals found in surface soils at this area of the Depot exceeded what EPA considers to be acceptable levels of risk for residents or workers, primarily through incidental exposure to those surface soils. The Depot was placed on the National Priorities List (NPL) before it was included on the base closure list. Prior to closure, areas of the Depot were under investigation by the DLA, EPA and Tennessee Department of Environment and Conservation (TDEC) to determine the need for cleanup, as required under CERCLA Section 120(a)(1) and (2). Cleanup levels must be consistent with the National Contingency Plan (NCP), as also required under CERCLA 120 (a)(1) and (2). The environmental cleanup began prior to the Depot being closed under BRAC. Closure served to provide greater emphasis and additional funding to complete the cleanup sooner.

Does the Depot have an Internet web page?

Yes. The Memphis Depot's web page has been established, and work continues on the web page to provide the appropriate information and documents. The Memphis

Depot's web page address is www.ddc.dla.mil/memphis. The Memphis Depot Caretaker Division is under the command of the Defense Distribution Depot Susquehanna, Pennsylvannia, which is under the command of the Defense Distribution Center. Information regarding all three organizations can be obtained from the DDC web page at www.ddc.dla.mil. The Defense Logistics Agency's web page at www.dla.mil contains a general overview of the agency's cleanup program.

Why isn't the information contained in documents and RAB meeting briefings not available on the Internet?

The web page for the Memphis Depot has been established, but work continues on the web page to provide the appropriate information and documents. The Information Repository that includes copies of documents, RAB meeting minutes and BRAC Cleanup Team meeting minutes will be made available on the web page as soon as possible.

What illnesses can be developed from chemicals found on certain parts of the Depot?

At the area being considered for removal under this Engineering Evaluation/Cost Analysis, metals and poly aromatic hydrocarbons are the contaminants of concern. Specific metals that exceed screening criteria include aluminum, antimony, arsenic and lead. Attached to this responsiveness summary are Agency for Toxic Substances and Disease Registry (ATSDR) "ToxFAQs" that provide information on how these substances may affect human health and that can also be found on ATSDR's Internet web page at atsdr1.atsdr.cdc.gov.

Are these illnesses the same as illnesses in the community?

The Agency for Toxic Substances and Disease Registry (ATSDR) is currently working on a Public Health Assessment that may address this question. ATSDR does publish informative, concise fact sheets called "ToxFAQs" that are chemical or contaminant specific.

DLA should look into the health of former employees, especially former employees who worked at sites being looked at to clean up.

The Defense Logistics Agency has received no claims and has no knowledge of any documentation linking former employees health issues to contamination at the Depot. The United States Department of Labor is responsible for health issues surrounding current and former employees. To begin the process for the Department of Labor to look into a health claim from a former employee, the employee must complete a CA-2 form with assistance from their physician. This form is available at any federal office that has a personnel/human resource office such as the Corps of Engineers at 167 Mid-America Mall North, (901) 544-0794. These forms can also be found on the internet at:

- **www.dol.gov/dol/esa/public/regs/compliance/owcp/forms.htm.**

The report was not made available to the public before the public comment meeting and the public did not have time to review it before being asked to comment.

The RAB was notified at the April 1999 meeting that the Engineering Evaluation/Cost Analysis (EE/CA) for Removal Action at the Old Paint Shop and Maintenance Area, Parcels 35 and 28, would be forthcoming. The RAB was also informed at

the April meeting that the May RAB meeting would include a briefing regarding the proposed removal action and a public comment period. The May/June 1999 EnviroNews that was delivered prior to the May RAB meeting included information regarding the EE/CA and public comment periods. The EE/CA was placed in the Depot's four Information Repositories on May 12. Advertisements announcing the availability of the EE/CA ran in the May 14 Tri-State Defender and Silver Star News and the May 13 Commercial Appeal. The 30-day public comment period began on May 17 and was scheduled to end on June 16. However, the public comment period was extended until July 19 due to a verbal request for a 30-day extension.

The National Contingency Plan {40 CFR 300.415(m)(4)(i)} requires the following for removal actions:

- Establish at least one Information Repository (the Depot has four and provides RAB members the opportunity to "check out" documents to review at home)
- Make the Administrative Record available in the Information Repository (IR) no later than the signing of the EE/CA approval memorandum (the Depot maintains the Administrative Record at the four IRs and provided the EE/CA prior to signing of the EE/CA approval memorandum)
- Publish a notice of availability and a brief description of the EE/CA in a major local newspaper of general circulation (the Depot published the notice of availability in three local newspapers)
- Upon completion of the EE/CA, provide a public comment period of at least 30 days that must be extended by at least 15 days upon timely request (the Depot provided a 30-day public comment period and extended it for an additional 30 days)

The public comment meeting was only one avenue open for the public to comment on this proposed removal action. The opportunity to comment was afforded throughout the 60-day comment period by providing comments in writing to the Memphis Depot or by leaving a message on the Memphis Depot's environmental information line telephone answering service. The address and telephone number were publicized at the May RAB meeting, as well as in the EnviroNews and the three newspaper notices.

The EPA acknowledged that the Depot followed all requirements of CERCLA and the NCP in conducting this public participation period.

Was this meeting and the public comment period publicized?

Yes. The May/June 1999 EnviroNews mailed to approximately 4,000 homes in the community surrounding the Memphis Depot contained detailed information about the 30-day public comment period, the May RAB meeting and the May public comment meeting. Advertisements regarding the May RAB meeting and the public comment period ran in the May 14 issues of the Tri-State Defender and the Silver Star News and in the May 13 issue of the Commercial Appeal. The notice of extension of the public comment period ran in the June 23 issue of the Commercial Appeal and the June 24 issues of the Tri-State Defender and the Silver Star News.

All RAB members should receive a copy of the document. We didn't know the document existed.

The public, as well as the RAB, has every opportunity to review the document as it is located in all four Depot Information Repositories. Additionally, the Memphis Depot notified the RAB at the May meeting that the document was available for RAB members to check out from the Memphis Depot Information Repository. No RAB member ever contacted the Memphis Depot to check out the document to review at home. Additionally, the executive summary of the document was distributed to the RAB during the comment period.

The RAB was notified at the April 1999 meeting that the Engineering Evaluation/Cost Analysis (EE/CA) for Removal Action at the Old Paint Shop and Maintenance Area, Parcels 35 and 28, would be forthcoming. The RAB was also informed at the April meeting that the May RAB meeting would include a briefing regarding the proposed removal action and a public comment period. The May/June 1999 EnviroNews that was delivered prior to the May RAB meeting included information regarding the EE/CA and public comment periods. The EE/CA was placed in the Depot's four Information Repositories on May 12. Advertisements announcing the availability of the EE/CA ran in the May 14 Tri-State Defender and Silver Star News and the May 13 Commercial Appeal. The 30-day public comment period began on May 17 and was scheduled to end on June 16. However, the public comment period was extended until July 19 due to a verbal request for a 30-day extension.

I want to see health studies done on the people who lived across Perry Road from this area.

The Agency for Toxic Substances and Disease Registry (ATSDR) is preparing a Public Health Assessment that addresses if contamination at the Depot could reach and effect the surrounding community. Questions concerning health issues should be directed to ATSDR or the Memphis/Shelby County Health Department.

DLA is using the RAB to say DLA has involved the community.

The EPA acknowledged that the Memphis Depot and the DLA have met and exceeded the requirements for public involvement associated with this proposed removal action. The Memphis Depot worked to involve the community in this proposed removal action process through the following:

- The bi-monthly newsletter EnviroNews mailed to approximately 4,000 households,
- Publishing public notices in the Tri-State Defender, the Silver Star News and the Commercial Appeal announcing availability of the EE/CA, the 30-day public comment period and the May 20 public comment meeting; and
- Providing a briefing describing the proposed removal action and a verbal public comment opportunity at the May 20 public comment meeting.

Also, the Depot sponsors a community outreach day at least yearly to educate the community on environmental issues at the Depot. Clearly, the RAB is not the only vehicle for public participation in environmental matters at the Site.

How do we know ATSDR will honestly answer our questions and comments if the public's comments are first discussed with Memphis Depot personnel?

The Agency for Toxic Substances and Disease Registry (ATSDR) discusses public comments with the Memphis Depot only when requesting information necessary to prepare an appropriate response. Defense Logistics Agency and Memphis Depot employees do not provide approval of ATSDR responses to public comments or outcomes of Public Health Assessments.

An independent agency should be the lead agency for cleanup at federal facilities.

Both EPA and TDEC are independent of the Department of Defense. Both serve to ensure that both state and federal environmental standards are met and that cleanup proceeds according to state and federal law. Responsibility for cleanup of federal facilities was delegated to the heads of the other Executive Branch departments and agencies (such as the Secretary of Defense) by the President in Executive Order 12088, and reaffirmed by Executive Order 12580 after CERCLA was amended in 1986. CERCLA Section 120 requires EPA to review all studies conducted under CERCLA at NPL sites, and requires the lead agency and EPA to enter into a federal facilities agreement that gives EPA the ultimate authority to select a remedial action in the event of an unresolved disagreement. Therefore, although the day-to-day responsibility for conducting investigations and cleanups rests with the Depot, EPA has a substantial statutory and regulatory role in ensuring the final cleanup is protective of human health and the environment.

If there are "long-term operations and maintenance," who will do it? Who will pay for it?

Long term operations and maintenance as a result of this proposed removal action will not occur. At other areas of the Memphis Depot where long-term operations and maintenance may be necessary, the Department of Defense will work through contractors or other government agencies to conduct the appropriate activities, and the Department of Defense will pay for it.

Why isn't the law passed by the State of Tennessee requiring signs be posted at Superfund sites stating the area is poison being enforced at the Depot?

No law has been passed requiring signs be posted at Superfund sites. House Joint Resolution 331, filed on May 20, 1997, was passed by the House of Representatives and required the Commissioner of the Department of Environment and Conservation to conduct a study and to report its findings and recommendations (including any proposed legislation) to the House on the feasibility of posting warning signs at and around National Priority List Superfund sites. This study was completed and a report issued back to the House on April 15, 1999. As with all applicable local, state and federal laws, the Memphis Depot will comply if this resolution becomes a law.

What are the current October 1998 HI values?

The EPA updated their Hazard Index (HI) values in October 1998. The HI are used to develop the EPA Region III risk based concentrations used in the EE/CA. EPA Region III risk based concentrations are attached and also can be found on the Internet at www.epa.gov/reg3hwmd/risk/riskmenu.htm.

The hazard index values are used to compare chemical concentrations to a unity value, or hazard quotient, of 1.0. EPA uses these values to evaluate the risk from chemicals that do not cause cancer (non-carcinogenic), but cause some other type of illness. These

values are provided in Table 1-4 of the EE/CA, so long as the contaminant is not a suspected carcinogen. See attached EPA Region III RBC Table to determine whether a chemical is a carcinogen or a non-carcinogen.

Make the figures referred to in the report available.

The figures are included in the document, which is available to the public in all four Memphis Depot Information Repositories. Additionally, the Memphis Depot notified the RAB at the May meeting that the document was available for RAB members to check out from the Memphis Depot Reading Room/Information Repository. No RAB member has contacted the Memphis Depot to check out the document to review at home.

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ATSDR ToxFAQs

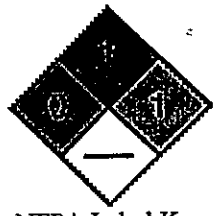
Aluminum

CAS# 7429-90-5

September 1995

Aluminum
Al
GIF Image
XYZ File

Search ChemFinder



NFPA Label Key

Material Safety Data Sheet
(University of Utah)

Agency for Toxic Substances and Disease Registry

This fact sheet answers the most frequently asked health questions about aluminum. For more information, you may call the ATSDR Information Center at 1-800-447-1544. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Everyone is exposed to low levels of aluminum from food, air, and water. Exposure to high levels of aluminum affects breathing, the nervous system, and bones. High levels can also cause birth defects. Aluminum has been found in at least 489 of 1,416 National Priorities List sites identified by the Environmental Protection Agency.

What is aluminum?
(Pronounced a-loo'mi-num)

Aluminum occurs naturally and makes up about 8% of the surface of the earth. It is always found combined with other elements in the earth such as minerals and rocks.

Aluminum metal is silver-white and flexible. It is often used in cooking utensils, containers, appliances, and building materials.

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It is used in several forms including aluminum nitrate, aluminum oxide, aluminum hydroxide (used in antacids), aluminum chlorohydrate (used in deodorants), and aluminum sulfate (used to treat drinking water). It is used in paints and fireworks, and to produce glass, rubber, and ceramics.

What happens to aluminum when it enters the environment?

- It binds to particles in the air.
- It can dissolve in lakes, streams, and rivers depending on the quality of the water.
- Acid rain may dissolve aluminum from soil and rocks.
- It can be taken up into some plants from soil.

How might I be exposed to aluminum?

- Eating small amounts of aluminum in food
- Breathing higher levels of aluminum dust in workplace air
- Drinking water with high levels of aluminum near waste sites, manufacturing plants, or areas naturally high in aluminum
- Eating substances containing high levels of aluminum (such as antacids)
- Very little enters your body from aluminum cooking utensils.

How can aluminum affect my health?

Low-level exposure to aluminum from food, air, water, or contact with skin is not thought to harm your health. Aluminum, however, is not a necessary substance for our bodies and too much may be harmful.

People who are exposed to high levels of aluminum in air may have respiratory problems including coughing and asthma from breathing dust.

Some studies with high levels in mice and rabbits show that aluminum may harm young animals more because it can cause delays in skeletal and neurologic development.

Aluminum has been linked to Alzheimer's disease because those patients have high levels of aluminum in their brains. We do not know whether aluminum causes the disease or whether the buildup of aluminum happens to people who already have the disease.

Infants and adults who received large doses of aluminum as a treatment for another problem developed bone diseases, which suggests that aluminum may cause skeletal problems.

Some sensitive people develop skin rashes from using aluminum chlorohydrate deodorants.

There is no evidence that aluminum affects reproduction in people or animals.

How likely is aluminum to cause cancer?

The Department of Health and Human Services has not classified aluminum for carcinogenicity.

The International Agency for Research on Cancer and the Environmental Protection Agency (EPA)

have not classified aluminum for carcinogenicity.

The available information has not shown that aluminum is a potential carcinogen.

Is there a medical test to show whether I've been exposed to aluminum?

There are tests to measure aluminum in blood, urine, and feces. The amount in your urine can tell you whether you have been exposed to higher than normal levels of aluminum.

Tests can also detect aluminum in your hair and fingernails. These tests are not routinely performed at your doctor's office, but your doctor can take blood, urine, or tissue samples and send them to a testing laboratory.

Has the federal government made recommendations to protect human health?

EPA requires that spills into the environment of 5,000 pounds or more of aluminum sulfate be reported. Special regulations are set for aluminum phosphide because it is a pesticide.

EPA recommends that the concentration of aluminum in drinking water not exceed 0.2 parts of aluminum per million parts of water (0.2 ppm) because of taste and odor problems.

The Food and Drug Administration (FDA) has determined that aluminum cooking utensils, aluminum foil, antiperspirants, antacids, and other aluminum products are generally safe.

The Occupational Safety and Health Administration (OSHA) set a maximum concentration limit for aluminum dust in workplace air of 15 milligrams of aluminum per cubic meter of air (15 mg/m^3) for an 8-hour workday over a 40-hour week.

The National Institute for Occupational Safety and Health (NIOSH) has recommended a limit of 10 mg/m^3 in workplace air for up to a 10-hour workday over a 40-hour workweek.

Glossary

Alzheimer's disease:
A disease of the nervous system that causes mental deterioration.
Carcinogenicity:
Ability to cause cancer.
Milligram (mg):
One thousandth of a gram.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1992. Toxicological profile for aluminum. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any

more questions or concerns.

For more information, contact:

Agency for Toxic Substances and Disease Registry
Division of Toxicology
1600 Clifton Road NE, Mailstop E-29
Atlanta, GA 30333
Phone: 1-800-447-1544
FAX: 404-639-6315

U.S. Department of Health and Human Services
Public Health Service
Agency for Toxic Substances and Disease Registry

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ATSDR Information Center / ATSDRIC@cdc.gov / 1-800-447-1544
Last Update: September 1, 1995

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ATSDR ToxFAQs

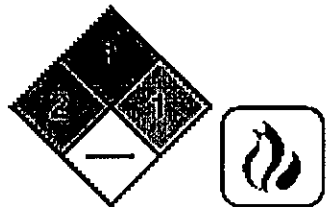
Antimony

CAS# 7440-36-0

September 1995

Antimony
Sb
GIF Image
XYZ File

Search ChemFinder



NFPA Label Key

Material Safety Data Sheet
(University of Utah)

Agency for Toxic Substances and Disease Registry

This fact sheet answers the most frequently asked health questions about antimony. For more information, you may call the ATSDR Information Center at 1-800-447-1544. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Exposure to antimony occurs in the workplace or from skin contact with soil at hazardous waste sites. Breathing high levels of antimony for a long time can irritate the eyes and lungs, and can cause problems with the lungs, heart, and stomach. This chemical has been found in at least 403 of 1,416 National Priorities List sites identified by the Environmental Protection Agency.

What is antimony?
(Pronounced an'ti-mo-nee)

Antimony is a silvery-white metal that is found in the earth's crust. Antimony ores are mined and then mixed with other metals to form antimony alloys or combined with oxygen to form antimony oxide.

Little antimony is currently mined in the United States. It is brought into this country from other

countries for processing. However, there are companies in the United States that produce antimony as a by-product of smelting lead and other metals.

Antimony isn't used alone because it breaks easily, but when mixed into alloys, it is used in lead storage batteries, solder, sheet and pipe metal, bearings, castings, and pewter. Antimony oxide is added to textiles and plastics to prevent them from catching fire. It is also used in paints, ceramics, and fireworks, and as enamels for plastics, metal, and glass.

What happens to antimony when it enters the environment?

- Antimony is released to the environment from natural sources and from industry.
- In the air, antimony is attached to very small particles that may stay in the air for many days.
- Most antimony ends up in soil, where it attaches strongly to particles that contain iron, manganese, or aluminum.
- Antimony is found at low levels in some rivers, lakes, and streams.

How might I be exposed to antimony?

- Because antimony is found naturally in the environment, the general population is exposed to low levels of it every day, primarily in food, drinking water, and air.
- It may be found in air near industries that process or release it, such as smelters, coal-fired plants, and refuse incinerators.
- In polluted areas containing high levels of antimony, it may be found in the air, water, and soil.
- Workers in industries that process it or use antimony ore may be exposed to higher levels.

How can antimony affect my health?

Exposure to antimony at high levels can result in a variety of adverse health effects.

Breathing high levels for a long time can irritate your eyes and lungs and can cause heart and lung problems, stomach pain, diarrhea, vomiting, and stomach ulcers.

In short-term studies, animals that breathed very high levels of antimony died. Animals that breathed high levels had lung, heart, liver, and kidney damage. In long-term studies, animals that breathed very low levels of antimony had eye irritation, hair loss, lung damage, and heart problems. Problems with fertility were also noted. In animal studies, problems with fertility have been seen when rats breathed very high levels of antimony for a few months.

Ingesting large doses of antimony can cause vomiting. We don't know what other effects may be caused by ingesting it. Long-term animal studies have reported liver damage and blood changes when animals ingested antimony. Antimony can irritate the skin if it is left on it.

Antimony can have beneficial effects when used for medical reasons. It has been used as a medicine to treat people infected with parasites.

How likely is antimony to cause cancer?

The Department of Health and Human Services, the International Agency for Research on Cancer, and the Environmental Protection Agency (EPA) have not classified antimony as to its human

carcinogenicity.

Lung cancer has been observed in some studies of rats that breathed high levels of antimony. No human studies are available. We don't know whether antimony will cause cancer in people.

Is there a medical test to show whether I've been exposed to antimony?

Tests are available to measure antimony levels in the body. Antimony can be measured in the urine, feces, and blood for several days after exposure. However, these tests cannot tell you how much antimony you have been exposed to or whether you will experience any health effects. Some tests are not usually performed in most doctors' offices and may require special equipment to conduct them.

Has the federal government made recommendations to protect human health?

The EPA allows 0.006 parts of antimony per million parts of drinking water (0.006 ppm). The EPA requires that discharges or spills into the environment of 5,000 pounds or more of antimony be reported.

The Occupational Safety and Health Administration (OSHA) has set an occupational exposure limit of 0.5 milligrams of antimony per cubic meter of air (0.5 mg/m^3) for an 8-hour workday, 40-hour workweek.

The American Conference of Governmental Industrial Hygienists (ACGIH) and the National Institute for Occupational Safety and Health (NIOSH) currently recommend the same guidelines for the workplace as OSHA.

Glossary

Carcinogenicity:
Ability to cause cancer.
Ingestion:
Taking food or drink into your body.
Long-term:
Lasting one year or more.
Milligram (mg):
One thousandth of a gram.
Parasite:
An organism living in or on another organism.
PPM:
Parts per million.
Short-term:
Lasting 14 days or less.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1992. Toxicological profile for antimony. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

For more information, contact:

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U.S. Department of Health and Human Services
Public Health Service
Agency for Toxic Substances and Disease Registry

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ATSDR ToxFAQs

Arsenic

CAS# 7440-38-2

April 1993

Arsenic
As
GIF Image
XYZ File

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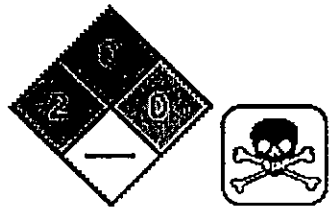

NFPA Label Key

Vermont SIRI MSDS Archive

Agency for Toxic Substances and Disease Registry

This fact sheet answers the most frequently asked health questions about arsenic. For more information, you may call the ATSDR Information Center at 1-800-447-1544. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Exposure to higher than average levels of arsenic happens mostly in the workplace, near hazardous waste sites, or in areas with high natural levels. Arsenic is a powerful poison. At high levels, it can cause death or illness. This chemical has been found in at least 781 of 1,300 National Priorities List sites identified by the Environmental Protection Agency.

What is arsenic?
(Pronounced ar' se-nik)

Arsenic is found in nature at low levels. It's mostly in compounds with oxygen, chlorine, and sulfur. These are called inorganic arsenic compounds. Arsenic in plants and animals combines with carbon and hydrogen. This is called organic arsenic. Organic arsenic is usually less harmful than inorganic arsenic.

Most arsenic compounds have no smell or special taste.

Inorganic arsenic compounds are mainly used to preserve wood. They are also used to make insecticides and weed killers. You can check the labels of treated wood and insecticides to see if they contain arsenic.

Copper and lead ores contain small amounts of arsenic.

What happens to arsenic when it enters the environment?

- It doesn't evaporate.
- Most arsenic compounds can dissolve in water.
- It gets into air when contaminated materials are burned.
- It settles from the air to the ground.
- It doesn't break down, but can change from one form to another.
- Fish and shellfish build up organic arsenic in their tissues, but most of the arsenic in fish isn't toxic.

How might I be exposed to arsenic?

- Breathing sawdust or burning smoke from wood containing arsenic
- Breathing workplace air
- Ingesting contaminated water, soil, or air at waste sites
- Ingesting contaminated water, soil, or air near areas naturally high in arsenic

How can arsenic affect my health?

Inorganic arsenic is a human poison. Organic arsenic is less harmful.

High levels of inorganic arsenic in food or water can be fatal. A high level is 60 parts of arsenic per million parts of food or water (60 ppm). Arsenic damages many tissues including nerves, stomach and intestines, and skin. Breathing high levels can give you a sore throat and irritated lungs.

Lower levels of exposure to inorganic arsenic may cause:

- Nausea, vomiting, and diarrhea
- Decreased production of red and white blood cells
- Abnormal heart rhythm
- Blood vessel damage
- A "pins and needles" sensation in hands and feet

Long term exposure to inorganic arsenic may lead to a darkening of the skin and the appearance of small "corns" or "warts" on the palms, soles, and torso.

Direct skin contact may cause redness and swelling.

How likely is arsenic to cause cancer?

The Department of Health and Human Services (DHHS) has determined that arsenic is a known carcinogen. Breathing inorganic arsenic increases the risk of lung cancer. Ingesting inorganic arsenic increases the risk of skin cancer and tumors of the bladder, kidney, liver, and lung.

Is there a medical test to show whether I've been exposed to arsenic?

Tests can measure your exposure to high levels of arsenic. These tests are not routinely performed in a doctor's office.

Arsenic can be measured in your urine. This is the most reliable test for arsenic exposure. Since arsenic stays in the body only short time, you must have the test soon after exposure.

Tests on hair or fingernails can measure your exposure to highlevels of arsenic over the past 6-12 months. These tests are not very useful for low level exposures.

These tests do not predict whether you will have any harmful health effects.

Has the federal government made recommendations to protect human health?

The Environmental Protection Agency (EPA) sets limits on the amount of arsenic that industrial sources can release. It restricted or canceled many uses of arsenic in pesticides and may restrict more. EPA set a limit of 0.05 parts per million (ppm) for arsenic in drinking water. EPA may lower this further.

The Occupational Safety and Health Administration (OSHA) established a maximum permissible exposure limit for workplace airborne arsenic of 10 micrograms per cubic meter ($\mu g/m^3$).

Glossary

Carcinogen:
Substance that can cause cancer.
Ingesting:
Taking food or drink into your body.
PPM:
Parts per million.
Microgram (µg):
One millionth of a gram.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1993. Toxicological profile for arsenic. Atlanta: U.S. Department of Health and Human Services, Public Health Service.

Agency for Toxic Substances and Disease Registry (ATSDR). 1993. Case studies in environmental medicine: Arsenic toxicity. Atlanta: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns. For more information, contact:

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Division of Toxicology
1600 Clifton Road NE, Mailstop E-29
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U.S. Department of Health and Human Services
Public Health Service
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ATSDR ToxFAQs

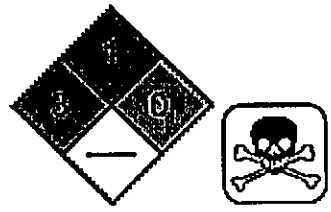
Lead

CAS# 7439-92-1

April 1993

Lead
Pb
GIF Image
XYZ File

Search ChemFinder



NFPA Label Key

Vermont SIRI MSDS Archive

Agency for Toxic Substances and Disease Registry

This fact sheet answers the most frequently asked health questions about lead. For more information, you may call the ATSDR Information Center at 1-800-447-1544. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Exposure to lead happens mostly from breathing workplace air or dust, and eating contaminated foods. Children can be exposed from eating lead-based paint chips, or playing in contaminated soil. Lead can damage the nervous system, kidneys, and the immune systems. Lead has been found in at least 922 of 1,300 National Priorities List sites identified by the Environmental Protection Agency.

What is lead?
(Pronounced led)

Lead is a naturally occurring bluish-gray metal found in small amounts in the earth's crust. It has no special taste or smell. Lead can be found in all parts of our environment. Most of it came from human activities like mining, manufacturing, and the burning of fossil fuels.

Lead has many different uses, most importantly in the production of batteries. Lead is also in

ammunition, metal products (solder and pipes), roofing, and devices to shield x-rays.

Because of health concerns, lead from gasoline, paints and ceramic products, caulking, and pipe solder has been dramatically reduced in recent years.

What happens to lead when it enters the environment?

- Lead itself does not break down, but lead compounds are changed by sunlight, air, and water.
- When released to the air from industry or burning of fossil fuels or waste, it stays in air about 10 days.
- Most of the lead in soil comes from particles falling out of the air.
- City soils also contain lead from landfills and leaded paint.
- Lead sticks to soil particles.
- It does not move from soil to underground water or drinking water unless the water is acidic or "soft".
- It stays a long time in both soil and water.

How might I be exposed to lead?

- Breathing workplace air (lead smelting, refining, and manufacturing industries)
- Eating lead-based paint chips
- Drinking water that comes from lead pipes or lead soldered fittings
- Breathing or ingesting contaminated soil, dust, air, or water near waste sites
- Breathing tobacco smoke
- Eating contaminated food grown on soil containing lead or food covered with lead-containing dust
- Breathing fumes or ingesting lead from hobbies that use lead (leaded-glass, ceramics)

How can lead affect my health?

Lead can affect almost every organ and system in your body. The most sensitive is the central nervous system, particularly in children. Lead also damages kidneys and the immune system. The effects are the same whether it is breathed or swallowed.

Exposure to lead is more dangerous for young and unborn children. Unborn children can be exposed to lead through their mothers. Harmful effects include premature births, smaller babies, decreased mental ability in the infant, learning difficulties, and reduced growth in young children. These effects are more common after exposure to high levels of lead.

In adults, lead may decrease reaction time, cause weakness in fingers, wrists, or ankles, and possibly affect the memory. Lead may cause anemia, a disorder of the blood. It can cause abortion and damage the male reproductive system. The connection between these effects and exposure to low levels of lead is uncertain.

How likely is lead to cause cancer?

The Department of Health and Human Services (DHHS) has determined that lead acetate and lead phosphate may reasonably be anticipated to be carcinogens based on studies in animals. There is inadequate evidence to clearly determine lead's carcinogenicity in humans.

Is there a medical test to show whether I've been exposed to lead?

A blood test is available to measure the amount of lead in your blood and to estimate the amount of your exposure to lead. Blood tests are commonly used to screen children for potential chronic lead poisoning. The Centers for Disease Control and Prevention (CDC) considers children to have an elevated level of lead if the amount in the blood is at least 10 micrograms per deciliter (10 µg/dL). Lead in teeth and bones can be measured with X-rays, but this test is not as readily available.

Has the federal government made recommendations to protect human health?

The Centers for Disease Control and Prevention (CDC) recommends all children be screened for lead poisoning at least once a year. This is especially important for children between 6 months and 6 years old.

The Environmental Protection Agency (EPA) requires lead in air not to exceed 1.5 micrograms per cubic meter (1.5 µg/m^3) averaged over 3 months. The sale of leaded gasoline will be illegal as of December 31, 1995. EPA limits lead in drinking water to 15 micrograms per liter (15 µg/L).

The Consumer Product Safety Commission (CPSC), EPA, and the states control the levels of lead in drinking water coolers. Water coolers that release lead must be recalled or repaired. New coolers must be lead-free. Drinking water in schools must be tested for lead.

The Department of Housing and Urban Development (HUD) requires that federally funded housing and renovations, public housing, and Indian housing be tested for lead-based paint hazards. Hazards must be fixed by covering the paint or removing it.

The Occupational Safety and Health Administration (OSHA) limits the concentration of lead in workroom air to 50 µg/cubic meter for an 8-hour workday. If a worker has a blood lead level of 40 µg/dL, OSHA requires that worker to be removed from the workroom.

Glossary

Carcinogenicity:
Ability to cause cancer.
Anemia:
Low numbers of red blood cells or hemoglobin.
Ingesting:
Taking food or drink into your body.
Microgram (µg):
One millionth of a gram.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1993. Toxicological profile for lead. Atlanta: U.S. Department of Health and Human Services, Public Health Service.

Agency for Toxic Substances and Disease Registry (ATSDR). 1993. Case studies in environmental medicine: Lead toxicity. Atlanta: U.S. Department of Health and Human Services, Public Health

Service.

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ATSDR ToxFAQs

Polycyclic Aromatic Hydrocarbons (PAHs)

CAS# 130498-29-2

September 1996

Polycyclic Aromatic Hydrocarbons
There is no molecular representation since this substance is a mixture of many compounds.

Search ChemFinder

Agency for Toxic Substances and Disease Registry

This fact sheet answers the most frequently asked health questions about polycyclic aromatic hydrocarbons. For more information, you may call the ATSDR Information Center at 1-800-447-1544. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because these substances may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Exposure to polycyclic aromatic hydrocarbons usually occurs by breathing air contaminated by wild fires or coal tar, or by eating foods that have been grilled. PAHs have been found in at least 600 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What are polycyclic aromatic hydrocarbons?

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot.

Some PAHs are manufactured. These pure PAHs usually exist as colorless, white, or pale yellow-green solids. PAHs are found in coal tar, crude oil, creosote, and roofing tar, but a few are used in medicines or to make dyes, plastics, and pesticides.

What happens to PAHs when they enter the environment?

- PAHs enter the air mostly as releases from volcanoes, forest fires, burning coal, and automobile exhaust.
- PAHs can occur in air attached to dust particles.
- Some PAH particles can readily evaporate into the air from soil or surface waters.
- PAHs can break down by reacting with sunlight and other chemicals in the air, over a period of days to weeks.
- PAHs enter water through discharges from industrial and wastewater treatment plants.
- Most PAHs do not dissolve easily in water. They stick to solid particles and settle to the bottoms of lakes or rivers.
- Microorganisms can break down PAHs in soil or water after a period of weeks to months.
- In soils, PAHs are most likely to stick tightly to particles; certain PAHs move through soil to contaminate underground water.
- PAH contents of plants and animals may be much higher than PAH contents of soil or water in which they live.

How might I be exposed to PAHs?

- Breathing air containing PAHs in the workplace of coking, coal-tar, and asphalt production plants; smokehouses; and municipal trash incineration facilities.
- Breathing air containing PAHs from cigarette smoke, wood smoke, vehicle exhausts, asphalt roads, or agricultural burn smoke.
- Coming in contact with air, water, or soil near hazardous waste sites.
- Eating grilled or charred meats; contaminated cereals, flour, bread; vegetables, fruits, meats; and processed or pickled foods.
- Drinking contaminated water or cow's milk.
- Nursing infants of mothers living near hazardous waste sites may be exposed to PAHs through their mother's milk.

How can PAHs affect my health?

Mice that were fed **high levels** of one PAH during pregnancy had difficulty reproducing and so did their offspring. These offspring also had higher rates of birth defects and lower body weights. It is not known whether these effects occur in people.

Animal studies have also shown that PAHs can cause harmful effects on the skin, body fluids, and ability to fight disease after both **short-** and **long-term** exposure. But these effects have not been seen in people.

How likely are PAHs to cause cancer?

The **Department of Health and Human Services (DHHS)** has determined that some PAHs may reasonably be expected to be carcinogens.

Some people who have breathed or touched mixtures of PAHs and other chemicals for **long periods** of time have developed cancer. Some PAHs have caused cancer in laboratory animals when they breathed air containing them (lung cancer), ingested them in food (stomach cancer), or had them

applied to their skin (skin cancer).

Is there a medical test to show whether I've been exposed to PAHs?

In the body, PAHs are changed into chemicals that can attach to substances within the body. There are special tests that can detect PAHs attached to these substances in body tissues or blood. However, these tests cannot tell whether any health effects will occur or find out the extent or source of your exposure to the PAHs. The tests aren't usually available in your doctor's office because special equipment is needed to conduct them.

Has the federal government made recommendations to protect human health?

The **Occupational Safety and Health Administration (OSHA)** has set a limit of 0.2 milligrams of PAHs per cubic meter of air (0.2 mg/m^3). The **OSHA** Permissible Exposure Limit (PEL) for mineral oil mist that contains PAHs is 5 mg/m^3 averaged over an 8-hour exposure period.

The **National Institute for Occupational Safety and Health (NIOSH)** recommends that the average workplace air levels for coal tar products not exceed 0.1 mg/m^3 for a 10-hour workday, within a 40-hour workweek. There are other limits for workplace exposure for things that contain PAHs, such as coal, coal tar, and mineral oil.

Glossary

Carcinogen:
A substance that can cause cancer.
Ingest:
Take food or drink into your body.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for polycyclic aromatic hydrocarbons. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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Sources: I = IRIS H = HEAST A = HEAST Alternate W = Withdrawn from IRIS or HEAST
E = EPA/NCEA provisional value O = other

Basis: C = Carcinogenic effects N = Noncarcinogenic effects I = RBC at HI of 0.1 < RBC-c

Chemical	CAS	RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC	Risk-based concentrations: Tap water ug/l	Ambient air ug/m3	Fish mg/kg	Soil Industrial mg/kg	Soil Residential mg/kg
**ACETALDEHYDE	75070			2 57E-003 I	7.7E-003 I	y	1.6E+000 C	8.1E-001 C			
ACETOCHLOR	34256821	2E-002 I					7.3E+002 N	7.3E+001 N	2.7E+001 N	4.1E+004 N	1.5E+003 N
**ACETONE	67641	1.00E-001 I				y	6.1E+002 N	3.7E+002 N	1.4E+002 N	2.0E+005 N	7.8E+003 N
**ACETONITRILE	75058			1 7E-002 I		y	1.2E+002 N	6.2E+001 N			
ACETOPHENONE	98862	1.00E-001 I		5 70E 006 W		y	4.2E-002 N	2.1E-002 N	1.4E+002 N	2.0E+005 N	7.8E+003 N
ACROLEIN	107028	2.00E-002 H		5 70E-006 I		y	4.2E-002 N	2.1E-002 N	2.7E+001 N	4.1E+004 N	1.5E+003 N
ACRYLAMIDE	79061	2.00E-004 I	4.50E+000 I		4 50E+000 I		1 5E-002 C	1.4E-003 C	7.0E-004 C	1.3E+000 C	1.4E-001 C
**ACRYLONITRILE	107131	1.00E-003 H	5 40E-001 I	5 70E-004 I	2 40E-001 I	y	3.7E-002 C	2.6E-002 C	5.8E-003 C	1.1E+001 C	1.2E+000 C
ALACHLOR	15972608	1.00E-002 I	8 00E-002 H				8 4E-001 C	7.8E-002 C	3.9E-002 C	7.2E+001 C	8.0E+000 C
ALAR	1596845	1.50E-001 I					5 5E+003 N	5.5E+002 N	2.0E+002 N	3.1E+005 N	1.2E+004 N
ALDICARB	116063	1.00E-003 I					3.7E+001 N	3.7E+000 N	1.4E+000 N	2.0E+003 N	7.8E+001 N
ALDICARB SULFONE	1646884	1.00E-003 I					3 7E+001 N	3.7E+000 N	1.4E+000 N	2.0E+003 N	7.8E+001 N
ALDRIN	309002	3.00E-005 I	1.70E+001 I		1 70E+001 I		3.9E-003 C	3.7E-004 C	1.9E-004 C	3.4E-001 C	3.8E-002 C
ALUMINUM	7429905	1.00E+000 E		1 00E-003 E			3.7E+004 N	3.7E+000 N	1.4E+003 N	2.0E+006 N	7.8E+004 N
AMINODINITROTOLUENES		6.00E-005 E					2.2E+000 N	2.2E-001 N	8.1E-002 N	1.2E+002 N	4.7E+000 N
4-AMINOPYRIDINE	504245	2.00E-005 H					7.3E-001 N	7.3E-002 N	2.7E-002 N	4.1E+001 N	1.6E+000 N
AMMONIA	7664417			2 86E-002 I		y	2.1E+002 N	1.0E+002 N			
**ANILINE	62533	7.00E-003 E	5 70E-003 I	2 90E-004 I			1.2E+001 C	1.1E+000 N	5.5E-001 C	1.0E+003 C	1.1E+002 C
ANTIMONY	7440360	4.00E-004 I					1.5E+001 N	1.5E+000 N	5.4E-001 N	8.2E+002 N	3.1E+001 N
ANTIMONY PENTOXIDE	1314609	5.00E-004 H					1.8E+001 N	1.8E+000 N	6.8E-001 N	1.0E+003 N	3.9E+001 N
ANTIMONY TETROXIDE	1332816	4.00E-004 H					1.5E+001 N	1.5E+000 N	5.4E-001 N	8.2E+002 N	3.1E+001 N
ANTIMONY TRIOXIDE	1309644	4.00E-004 H		5 70E-005 I			1.5E+001 N	2.1E-001 N	5.4E-001 N	8.2E+002 N	3.1E+001 N
ARSENIC	7440382	3.00E-004 I	1.50E+000 I		1 51E+001 I		4.5E-002 C	4.1E-004 C	2.1E-003 C	3.8E+000 C	4.3E-001 C
ARSINE	7784421			1 40E-005 I		y	1.0E-001 N	5.1E-002 N			
ASSURE	76578148	9.00E-003 I					3.3E+002 N	3.3E+001 N	1.2E+001 N	1.8E+004 N	7.0E+002 N
ATRAZINE	1912249	3.50E-002 I	2.20E-001 H				3.0E-001 C	2.8E-002 C	1.4E-002 C	2.6E+001 C	2.9E+000 C
AZOBENZENE	103333		1 10E-001 I		1 10E-001 I		6.1E-001 C	5.7E-002 C	2.9E-002 C	5.2E+001 C	5.8E+000 C
BARIUM	7440393	7.00E-002 I		1 40E-004 A			2.6E+003 N	5.1E-001 N	9.5E+001 N	1.4E+005 N	5.5E+003 N
BAYGON	114261	4.00E-003 I					1.5E+002 N	1.5E+001 N	5.4E+000 N	8.2E+003 N	3.1E+002 N
BAYTHROID	68359375	2.50E-002 I					9 1E+002 N	9.1E+001 N	3.4E+001 N	5.1E+004 N	2.0E+003 N
BENTAZON	25057890	3.00E-002 I					1.1E+003 N	1.1E+002 N	4.1E+001 N	6.1E+004 N	2.3E+003 N
BENZALDEHYDE	100527	1 00E-001 I					3.7E+003 N	3.7E+002 N	1.4E+002 N	2.0E+005 N	7.8E+003 N
BENZENE	71432	3.00E-003 E	2 90E-002 I	1 70E-003 E	2 90E-002 I	y	3.6E-001 C	2.2E-001 C	1.1E-001 C	2.0E+002 C	2.2E+001 C
BENZENETHIOL	108985	1.00E-005 H				y	6.1E-002 N	3.7E-002 N	1.4E-002 N	2.0E+001 N	7.8E-001 N
BENZIDINE	92875	3.00E-003 I	2 30E+002 I		2 30E+002 I		2 9E-004 C	2.7E-005 C	1.4E-005 C	2.5E-002 C	2.8E-003 C
BENZOIC ACID	65850	4.00E+000 I					1 5E+005 N	1.5E+004 N	5.4E+003 N	8.2E+006 N	3.1E+005 N
BENZYL ALCOHOL	100516	3.00E-001 H					1.1E+004 N	1.1E+003 N	4.1E+002 N	6.1E+005 N	2.3E+004 N
BENZYL CHLORIDE	100447		0 17 I			y	6.2E-002 C	3.7E-002 C	1.9E-002 C	3.4E+001 C	3.8E+000 C
BERYLLIUM	7440417	2.00E-003 I		5 7E-006 I	8 40E+000 I		7.3E+001 N	7.5E-004 C	2.7E+000 N	4.1E+003 N	1.6E+002 N
BIPHENYL	92524	5.00E-002 I				y	3 0E+002 N	1.8E+002 N	6.8E+001 N	1.0E+005 N	3.9E+003 N
**BIS(2-CHLOROETHYL)ETHER	111444		1 10E+000 I		1 10E+000 I	y	9 6E-003 C	5.7E-003 C	2.9E-003 C	5.2E+000 C	5.8E-001 C
BIS(2-CHLOROISOPROPYL)ETHER	108601	4.00E-002 I	7.00E-002 H		3 50E-002 H	y	2.6E-001 C	1.8E-001 C	4.5E-002 C	8.2E+001 C	9.1E+000 C
BIS(CHLOROMETHYL)ETHER	542881		2.20E+002 I		2.20E+002 I	y	4.8E-005 C	2.8E-005 C	1.4E-005 C	2.6E-002 C	2.9E-003 C
BIS(2-ETHYLHEXYL)PHTHALATE	117817	2.00E-002 I	1.40E-002 I		1 40E-002 E		4.8E+000 C	4.5E-001 C	2.3E-001 C	4.1E+002 C	4.6E+001 C
BORON	7440428	9.00E-002 I		5 70E-003 H			3 3E+003 N	2.1E+001 N	1.2E+002 N	1.8E+005 N	7.0E+003 N

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Basis: C = Carcinogenic effects N = Noncarcinogenic effects I = RBC at HI of 0.1 < RBC-c

Risk-based concentrations

Chemical	CAS	RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC	Tap water ug/l	Ambient air ug/m3	Fish mg/kg	Soil Industrial mg/kg	Residential mg/kg
BROMODICHLOROMETHANE	75274	2.00E-002 I	6.20E-002 I			y	1.7E-001 C	1.0E-001 C	5.1E-002 C	9.2E+001 C	1.0E+001 C
BROMOETHENE	593602			8.6E-004 I	1.10E-001 H	y	1.1E-001 C	5.7E-002 C			
**BROMOFORM	75252	2.00E-002 I	7.90E-003 I		3.90E-003 I		8.5E+000 C	1.6E+000 C	4.0E-001 C	7.2E+002 C	8.1E+001 C
BROMOMETHANE	74839	1.40E-003 I		1.40E-003 I		y	8.5E+000 N	5.1E+000 N	1.9E+000 N	2.9E+003 N	1.1E+002 N
**BROMOPHOS	2104963	5.00E-003 H					1.8E+002 N	1.8E+001 N	6.8E+000 N	1.0E+004 N	3.9E+002 N
1,3-BUTADIENE	106990				1.80E+000 H	y	7.0E-003 C	3.5E-003 C			
1-BUTANOL	71363	1.00E-001 I					3.7E+003 N	3.7E+002 N	1.4E+002 N	2.0E+005 N	7.8E+003 N
BUTYLBENZYLPHTHALATE	85687	2.00E-001 I					7.3E+003 N	7.3E+002 N	2.7E+002 N	4.1E+005 N	1.5E+004 N
BUTYLATE	2008415	5.00E-002 I					1.8E+003 N	1.8E+002 N	6.8E+001 N	1.0E+005 N	3.9E+003 N
N-BUTYLBENZENE	104518	1.00E-002 E				y	6.1E+001 N	3.7E+001 N	1.4E+001 N	2.0E+004 N	7.8E+002 N
SEC-BUTYLBENZENE	135988	1.00E-002 E				y	6.1E+001 N	3.7E+001 N	1.4E+001 N	2.0E+004 N	7.8E+002 N
TERT-BUTYLBENZENE	98066	1.00E-002 E				y	6.1E+001 N	3.7E+001 N	1.4E+001 N	2.0E+004 N	7.8E+002 N
CADMIUM-WATER	7440439	5.00E-004 I			6.30E+000 I		1.8E+001 N	9.9E-004 C	6.8E-001 N	1.0E+003 N	3.9E+001 N
CADMIUM-FOOD	7440439	1.00E-003 I			6.30E+000 I		3.7E+001 N	9.9E-004 C	1.4E+000 N	2.0E+003 N	7.8E+001 N
CAPROLACTAM	105602	5.00E-001 I					1.8E+004 N	1.8E+003 N	6.8E+002 N	1.0E+006 N	3.9E+004 N
CARBARYL	63252	1.00E-001 I					3.7E+003 N	3.7E+002 N	1.4E+002 N	2.0E+005 N	7.8E+003 N
CARBON DISULFIDE	75150	1.00E-001 I		2.00E-001 I		y	1.0E+003 N	7.3E+002 N	1.4E+002 N	2.0E+005 N	7.8E+003 N
CARBON TETRACHLORIDE	56235	7.00E-004 I	1.30E-001 I	5.71E-004 E	5.30E-002 I	y	1.6E-001 C	1.2E-001 C	2.4E-002 C	4.4E+001 C	4.9E+000 C
CARBOSULFAN	55285148	1.00E-002 I					3.7E+002 N	3.7E+001 N	1.4E+001 N	2.0E+004 N	7.8E+002 N
**CHLORAL	75876	2.00E-003 I					7.3E+001 N	7.3E+000 N	2.7E+000 N	4.1E+003 N	1.5E+002 N
CHLORANIL	118752		4.00E-001 H				1.7E-001 C	1.6E-002 C	7.9E-003 C	1.4E+001 C	1.5E+000 C
CHLORDANE	57749	5.00E-004 I	3.5E-001 I	2.00E-004 I	3.5E-001 I		1.9E-001 C	1.8E-002 C	9.0E-003 C	1.6E+001 C	1.8E+000 C
CHLORINE	7782505	1.00E-001 I				y	6.1E+002 N	3.7E+002 N	1.4E+002 N	2.0E+005 N	7.8E+003 N
CHLORINE DIOXIDE	10049044			5.70E-005 I		y	4.2E-001 N	2.1E-001 N			
CHLOROACETIC ACID	79118	2.00E-003 H					7.3E+001 N	7.3E+000 N	2.7E+000 N	4.1E+003 N	1.5E+002 N
4-CHLOROANILINE	106478	4.00E-003 I					1.5E+002 N	1.5E+001 N	5.4E+000 N	8.2E+003 N	3.1E+002 N
**CHLOROBENZENE	108907	2.00E-002 I		1.7E-002 E		y	1.1E+002 N	6.2E+001 N	2.7E+001 N	4.1E+004 N	1.5E+003 N
CHLOROBENZILATE	510156	2.00E-002 I	2.70E-001 H		2.70E-001 H		2.5E-001 C	2.3E-002 C	1.2E-002 C	2.1E+001 C	2.4E+000 C
P-CHLOROBENZOIC ACID	74113	2.00E-001 H					7.3E+003 N	7.3E+002 N	2.7E+002 N	4.1E+005 N	1.5E+004 N
2-CHLORO-1,3-BUTADIENE	126998	2.00E-002 A		2.00E-003 H		y	1.4E+001 N	7.3E+000 N	2.7E+001 N	4.1E+004 N	1.5E+003 N
1-CHLOROBUTANE	109693	4.00E-001 H				y	2.4E+003 N	1.5E+003 N	5.4E+002 N	8.2E+005 N	3.1E+004 N
1-CHLORO-1,1-DIFLUOROETHANE	75683			1.40E+001 I		y	1.0E+005 N	5.1E+004 N			
CHLORODIFLUOROMETHANE	75456			1.40E+001 I		y	1.0E+005 N	5.1E+004 N			
CHLOROETHANE	75003	4.00E-001 E	2.90E-003 E	2.90E+000 I		y	3.6E+000 C	2.2E+000 C	1.1E+000 C	2.0E+003 C	2.2E+002 C
CHLOROFORM	67663	1.00E-002 I	6.10E-003 I	8.6E-005 E	8.10E-002 I	y	1.5E-001 C I	7.7E-002 C I	5.2E-001 C	9.4E+002 C	1.0E+002 C I
**CHLOROMETHANE	74873		1.30E-002 H	8.6E-002 E	3.5E-003 E	y	2.1E+000 C	1.8E+000 C	2.4E-001 C	4.4E+002 C	4.9E+001 C
4-CHLORO-2-METHYLANILINE	95692		5.80E-001 H				1.2E-001 C	1.1E-002 C	5.4E-003 C	9.9E+000 C	1.1E+000 C
BETA-CHLORONAPHTHALENE	91587	8.00E-002 I				y	4.9E+002 N	2.9E+002 N	1.1E+002 N	1.6E+005 N	6.3E+003 N
O-CHLORONITROBENZENE	88733		2.50E-002 H			y	4.2E-001 C	2.5E-001 C	1.3E-001 C	2.3E+002 C	2.6E+001 C
P-CHLORONITROBENZENE	100005		1.80E-002 H			y	5.9E-001 C	3.5E-001 C	1.8E-001 C	3.2E+002 C	3.5E+001 C
**2-CHLOROPHENOL	95578	5.00E-003 I				y	3.0E+001 N	1.8E+001 N	6.8E+000 N	1.0E+004 N	3.9E+002 N
2-CHLOROPROPANE	75296			2.90E-002 H		y	2.1E+002 N	1.1E+002 N			
O-CHLOROTOLUENE	95498	2.00E-002 I				y	1.2E+002 N	7.3E+001 N	2.7E+001 N	4.1E+004 N	1.5E+003 N
CHLORPYRIFOS	2921882	3.00E-003 I					1.1E+002 N	1.1E+001 N	4.1E+000 N	6.1E+003 N	2.3E+002 N
CHLORPYRIFOS-METHYL	5598130	1.00E-002 H					3.7E+002 N	3.7E+001 N	1.4E+001 N	2.0E+004 N	7.8E+002 N

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Chemical	CAS	RfDo mg/kg/d	CSFo 1/mg/kg/d	RfDi mg/kg/d	CSFi 1/mg/kg/d	VOC	Risk-based concentrations: Tap water ug/l	Ambient air ug/m3	Fish mg/kg	Soil industrial mg/kg	Residential mg/kg
CHROMIUM III	16065831	1.50E+000 I					5.5E+004 N	5.5E+003 N	2.0E+003 N	3.1E+006 N	1.2E+005 N
CHROMIUM VI	18540299	3.00E-003 I		3.00E-005 I	4.10E+001 H		1.1E+002 N	1.5E-004 C	4.1E+000 N	6.1E+003 N	2.3E+002 N
COBALT	7440484	6.00E-002 E					2.2E+003 N	2.2E+002 N	8.1E+001 N	1.2E+005 N	4.7E+003 N
**COKE OVEN EMISSIONS (COAL TAR)	8007452				2 2 I			2.8E-003 C			
COPPER	7440508	4.00E-002 H					1.5E+003 N	1.5E+002 N	5.4E+001 N	8.2E+004 N	3.1E+003 N
**CROTONALDEHYDE	123739		1.90E+000 H			y	5.6E-003 C	3.3E-003 C	1.7E-003 C	3.0E+000 C	3.4E-001 C
CUMENE	98828	1.00E-001 I		1.10E-001 I		y	6.6E+002 N	4.0E+002 N	1.4E+002 N	2.0E+005 N	7.8E+003 N
CYANIDE (FREE)	57125	2.00E-002 I					7.3E+002 N	7.3E+001 N	2.7E+001 N	4.1E+004 N	1.6E+003 N
CALCIUM CYANIDE	592018	4E-002 I					1.5E+003 N	1.5E+002 N	5.4E+001 N	8.2E+004 N	3.1E+003 N
COPPER CYANIDE	544923	5.00E-003 I					1.8E+002 N	1.8E+001 N	6.8E+000 N	1.0E+004 N	3.9E+002 N
CYANAZINE	21725462	2.00E-003 H	8.40E-001 H				8.0E-002 C	7.5E-003 C	3.8E-003 C	6.8E+000 C	7.6E-001 C
CYANOGEN	460195	4.00E-002 I				y	2.4E+002 N	1.5E+002 N	5.4E+001 N	8.2E+004 N	3.1E+003 N
CYANOGEN BROMIDE	506683	9.00E-002 I					3.3E+003 N	3.3E+002 N	1.2E+002 N	1.8E+005 N	7.0E+003 N
CYANOGEN CHLORIDE	506774	5.00E-002 I					1.8E+003 N	1.8E+002 N	6.8E+001 N	1.0E+005 N	3.9E+003 N
HYDROGEN CYANIDE	74908	2.00E-002 I		8.60E-004 I		y	6.2E+000 N	3.1E+000 N	2.7E+001 N	4.1E+004 N	1.6E+003 N
POTASSIUM CYANIDE	151508	5.00E-002 I					1.8E+003 N	1.8E+002 N	6.8E+001 N	1.0E+005 N	3.9E+003 N
POTASSIUM SILVER CYANIDE	506616	2.00E-001 I					7.3E+003 N	7.3E+002 N	2.7E+002 N	4.1E+005 N	1.6E+004 N
SILVER CYANIDE	506649	1.00E-001 I					3.7E+003 N	3.7E+002 N	1.4E+002 N	2.0E+005 N	7.8E+003 N
SODIUM CYANIDE	143339	4.00E-002 I					1.5E+003 N	1.5E+002 N	5.4E+001 N	8.2E+004 N	3.1E+003 N
THIOCYANATE		1.00E-001 E					3.7E+003 N	3.7E+002 N	1.4E+002 N	2.0E+005 N	7.8E+003 N
ZINC CYANIDE	557211	5.00E-002 I					1.8E+003 N	1.8E+002 N	6.8E+001 N	1.0E+005 N	3.9E+003 N
CYCLOHEXANONE	108941	5.00E+000 I					1.8E+005 N	1.8E+004 N	6.8E+003 N	1.0E+007 N	3.9E+005 N
CYHALOTHRIN/KARATE	68085858	5.00E-003 I					1.8E+002 N	1.8E+001 N	6.8E+000 N	1.0E+004 N	3.9E+002 N
CYPERMETHRIN	52315078	1.00E-002 I					3.7E+002 N	3.7E+001 N	1.4E+001 N	2.0E+004 N	7.8E+002 N
DACTHAL	1861321	1.00E-002 I					3.7E+002 N	3.7E+001 N	1.4E+001 N	2.0E+004 N	7.8E+002 N
DALAPON	75990	3.00E-002 I					1.1E+003 N	1.1E+002 N	4.1E+001 N	6.1E+004 N	2.3E+003 N
DDD	72548		2.40E-001 I				2.8E-001 C	2.8E-002 C	1.3E-002 C	2.4E+001 C	2.7E+000 C
DDE	72559		3.40E-001 I				2.0E-001 C	1.8E-002 C	9.3E-003 C	1.7E+001 C	1.9E+000 C
DDT	50293	5.00E-004 I	3.40E-001 I		3.40E-001 I		2.0E-001 C	1.8E-002 C	9.3E-003 C	1.7E+001 C	1.9E+000 C
DIAZINON	333415	9.00E-004 H					3.3E+001 N	3.3E+000 N	1.2E+000 N	1.8E+003 N	7.0E+001 N
DIBENZOFURAN	132649	4.00E-003 E				y	2.4E+001 N	1.5E+001 N	5.4E+000 N	8.2E+003 N	3.1E+002 N
**1,4-DIBROMOBENZENE	106376	1.00E-002 I					3.7E+002 N	3.7E+001 N	1.4E+001 N	2.0E+004 N	7.8E+002 N
DIBROMOCHLOROMETHANE	124481	2.00E-002 I	8.40E-002 I			y	1.3E-001 C	7.5E-002 C	3.8E-002 C	6.8E+001 C	7.6E+000 C
1,2-DIBROMO-3-CHLOROPROPANE	96128		1.40E+000 H	5.70E-005 I	2.40E-003 H	y	4.7E-002 C I	2.1E-001 N	2.3E-003 C	4.1E+000 C	4.6E-001 C
1,2-DIBROMOETHANE	106934		8.50E+001 I	5.70E-005 H	7.60E-001 I	y	7.5E-004 C	8.2E-003 C	3.7E-005 C	6.7E-002 C	7.5E-003 C
DIBUTYLPHTHALATE	84742	1.00E-001 I					3.7E+003 N	3.7E+002 N	1.4E+002 N	2.0E+005 N	7.8E+003 N
DICAMBA	1918009	3.00E-002 I					1.1E+003 N	1.1E+002 N	4.1E+001 N	6.1E+004 N	2.3E+003 N
1,2-DICHLOROBENZENE	95501	9.00E-002 I		9.00E-003 E		y	6.4E+001 N	3.3E+001 N	1.2E+002 N	1.8E+005 N	7.0E+003 N
**1,3-DICHLOROBENZENE	541731	9.00E-004 E				y	5.5E+000 N	3.3E+000 N	1.2E+000 N	1.8E+003 N	7.0E+001 N
1,4-DICHLOROBENZENE	106467	3.00E-002 E	2.40E-002 H	2.29E-001 I	2.2E-002 E	y	4.7E-001 C	2.8E-001 C	1.3E-001 C	2.4E+002 C	2.7E+001 C
3,3'-DICHLOROBENZIDINE	91941		4.50E-001 I				1.5E-001 C	1.4E-002 C	7.0E-003 C	1.3E+001 C	1.4E+000 C
1,4-DICHLORO-2-BUTENE	764410				9.30E+000 H	y	1.3E-003 C	6.7E-004 C			
DICHLORODIFLUOROMETHANE	75718	2.00E-001 I		5.00E-002 A		y	3.5E+002 N	1.8E+002 N	2.7E+002 N	4.1E+005 N	1.6E+004 N
1,1-DICHLOROETHANE	75343	1.00E-001 H		1.40E-001 A		y	8.0E+002 N	5.1E+002 N	1.4E+002 N	2.0E+005 N	7.8E+003 N
1,2-DICHLOROETHANE	107062	3.00E-002 E	9.10E-002 I	1.40E-003 E	9.10E-002 I	y	1.2E-001 C	6.9E-002 C	3.5E-002 C	6.3E+001 C	7.0E+000 C

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Chemical	CAS	RfDo mg/kg/d		CSFo 1/mg/kg/d		RfDi mg/kg/d		CSFi 1/mg/kg/d		VOC	Risk-based concentrations: Tap water ug/l		Ambient air ug/m3		Fish mg/kg		Soil Industrial mg/kg		Residential mg/kg	
1,1-DICHLOROETHENE	75354	9.00E-003	I	6.00E-001	I			1.75E-001	I	y	4.4E-002	C	3.6E-002	C	5.3E-003	C	9.5E+000	C	1.1E+000	C
CIS-1,2-DICHLOROETHENE	156592	1.00E-002	H							y	6.1E+001	N	3.7E+001	N	1.4E+001	N	2.0E+004	N	7.8E+002	N
TRANS-1,2-DICHLOROETHENE	156605	2.00E-002	I							y	1.2E+002	N	7.3E+001	N	2.7E+001	N	4.1E+004	N	1.6E+003	N
TOTAL 1,2-DICHLOROETHENE	540590	9.00E-003	H							y	5.5E+001	N	3.3E+001	N	1.2E+001	N	1.8E+004	N	7.0E+002	N
2,4-DICHLOROPHENOL	120832	3.00E-003	I								1.1E+002	N	1.1E+001	N	4.1E+000	N	6.1E+003	N	2.3E+002	N
**2,4-D	94757	1.00E-002	I								3.7E+002	N	3.7E+001	N	1.4E+001	N	2.0E+004	N	7.8E+002	N
4-(2,4-DICHLOROPHENOXY)BUTYRIC ACID	94826	8E-003	I								2.9E+002	N	2.9E+001	N	1.1E+001	N	1.6E+004	N	6.3E+002	N
1,2-DICHLOROPROPANE	78875			6.80E-002	H	1.14E-003	I			y	1.6E-001	C	9.2E-002	C	4.6E-002	C	8.4E+001	C	9.4E+000	C
2,3-DICHLOROPROPANOL	616239	3.00E-003	I								1.1E+002	N	1.1E+001	N	4.1E+000	N	6.1E+003	N	2.3E+002	N
1,3-DICHLOROPROPENE	542756	3.00E-004	I	1.80E-001	H	5.71E-003	I	1.30E-001	H	y	7.7E-002	C	4.8E-002	C	1.8E-002	C	3.2E+001	C	3.5E+000	C !
DICHLORVOS	62737	5E-004	I	0.29	I	1.43E-004	I				2.3E-001	C	2.2E-002	C	1.1E-002	C	2.0E+001	C	2.2E+000	C
DICOFOL	115322			4.4E-001	W						1.5E-001	C	1.4E-002	C	7.2E-003	C	1.3E+001	C	1.5E+000	C
DICYCLOPENTADIENE	77736	3E-002	H			6.00E-005	A			y	4.4E-001	N	2.2E-001	N	4.1E+001	N	6.1E+004	N	2.3E+003	N
DIELDRIN	60571	5.00E-005	I	1.60E+001	I			1.60E+001	I		4.2E-003	C	3.9E-004	C	2.0E-004	C	3.6E-001	C	4.0E-002	C
DIESEL EMISSIONS						1.40E-003	I						5.1E+000	N						
DIETHYLPHTHALATE	84662	8.00E-001	I								2.9E+004	N	2.9E+003	N	1.1E+003	N	1.6E+006	N	6.3E+004	N
DIETHYLENE GLYCOL, MONOBUTYL ETHER	112345					5.70E-003	H						2.1E+001	N						
DIETHYLENE GLYCOL, MONOETHYL ETHER	111900	2.00E+000	H								7.3E+004	N	7.3E+003	N	2.7E+003	N	4.1E+006	N	1.6E+005	N
DI(2-ETHYLHEXYL)ADIPATE	103231	6.00E-001	I	1.20E-003	I						5.6E+001	C	5.2E+000	C	2.6E+000	C	4.8E+003	C	5.3E+002	C
DIETHYLSTILBESTROL	56531			4.70E+003	H						1.4E-005	C	1.3E-006	C	6.7E-007	C	1.2E-003	C	1.4E-004	C
DIFENZOQUAT (AVENGE)	43222486	8.00E-002	I								2.9E+003	N	2.9E+002	N	1.1E+002	N	1.6E+005	N	6.3E+003	N
1,1-DIFLUOROETHANE	75376					1.10E+001	I			y	8.0E+004	N	4.0E+004	N						
DIISOPROPYL METHYLPHOSPHONATE (DIMP)	1445756	8.00E-002	I								2.9E+003	N	2.9E+002	N	1.1E+002	N	1.6E+005	N	6.3E+003	N
3,3'-DIMETHOXYBENZIDINE	119904			1.40E-002	H						4.8E+000	C	4.5E-001	C	2.3E-001	C	4.1E+002	C	4.6E+001	C
**DIMETHYLAMINE	124403					5.70E-006	W			y	4.2E-002	N	2.1E-002	N						
2,4-DIMETHYLANILINE HYDROCHLORIDE	21436979			5.80E-001	H						1.2E-001	C	1.1E-002	C	5.4E-003	C	9.9E+000	C	1.1E+000	C
2,4-DIMETHYLANILINE	95681			7.50E-001	H						8.9E-002	C	8.3E-003	C	4.2E-003	C	7.6E+000	C	8.5E-001	C
N,N-DIMETHYLANILINE	121697	2.00E-003	I								7.3E+001	N	7.3E+000	N	2.7E+000	N	4.1E+003	N	1.6E+002	N
3,3'-DIMETHYLBENZIDINE	119937			9.20E+000	H						7.3E-003	C	6.8E-004	C	3.4E-004	C	6.2E-001	C	6.9E-002	C
1,1-DIMETHYLHYDRAZINE	57147			2.60E+000	W			3.50E+000	W		2.6E-002	C	1.8E-003	C	1.2E-003	C	2.2E+000	C	2.5E-001	C
1,2-DIMETHYLHYDRAZINE	540738			3.70E+001	W			3.70E+001	W		1.8E-003	C	1.7E-004	C	8.5E-005	C	1.5E-001	C	1.7E-002	C
2,4-DIMETHYLPHENOL	105679	2.00E-002	I								7.3E+002	N	7.3E+001	N	2.7E+001	N	4.1E+004	N	1.6E+003	N
2,6-DIMETHYLPHENOL	576261	6.00E-004	I								2.2E+001	N	2.2E+000	N	8.1E-001	N	1.2E+003	N	4.7E+001	N
3,4-DIMETHYLPHENOL	95658	1.00E-003	I								3.7E+001	N	3.7E+000	N	1.4E+000	N	2.0E+003	N	7.8E+001	N
DIMETHYLPHTHALATE	131113	1.00E+001	W								3.7E+005	N	3.7E+004	N	1.4E+004	N	2.0E+007	N	7.8E+005	N
1,2-DINITROBENZENE	528290	4.00E-004	H								1.5E+001	N	1.5E+000	N	5.4E-001	N	8.2E+002	N	3.1E+001	N
1,3-DINITROBENZENE	99650	1.00E-004	I								3.7E+000	N	3.7E-001	N	1.4E-001	N	2.0E+002	N	7.8E+000	N
1,4-DINITROBENZENE	100254	4.00E-004	H								1.5E+001	N	1.5E+000	N	5.4E-001	N	8.2E+002	N	3.1E+001	N
4,6-DINITRO-O-CYCLOHEXYL PHENOL	131895	2.00E-003	I								7.3E+001	N	7.3E+000	N	2.7E+000	N	4.1E+003	N	1.6E+002	N
4,6-DINITRO-2-METHYLPHENOL	534521	1.00E-004	E								3.7E+000	N	3.7E-001	N	1.4E-001	N	2.0E+002	N	7.8E+000	N
2,4-DINITROPHENOL	51285	2.00E-003	I								7.3E+001	N	7.3E+000	N	2.7E+000	N	4.1E+003	N	1.6E+002	N
DINITROTOLUENE MIX				6.80E-001	I						9.8E-002	C	9.2E-003	C	4.6E-003	C	8.4E+000	C	9.4E-001	C
2,4-DINITROTOLUENE	121142	2.00E-003	I								7.3E+001	N	7.3E+000	N	2.7E+000	N	4.1E+003	N	1.6E+002	N
2,6-DINITROTOLUENE	606202	1.00E-003	H								3.7E+001	N	3.7E+000	N	1.4E+000	N	2.0E+003	N	7.8E+001	N
**DINOSEB	88857	1.00E-003	I								3.7E+001	N	3.7E+000	N	1.4E+000	N	2.0E+003	N	7.8E+001	N

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DIOCTYLPHTHALATE	117840	2.00E-002 H					7.3E+002 N	7.3E+001 N	2.7E+001 N	4.1E+004 N	1.6E+003 N
1,4-DIOXANE	123911		1.10E-002 I				6.1E+000 C	5.7E-001 C	2.9E-001 C	5.2E+002 C	5.8E+000 C
DIPHENYLAMINE	122394	2.50E-002 I					9.1E+002 N	9.1E+001 N	3.4E+001 N	5.1E+004 N	2.0E+003 N
1,2-DIPHENYLHYDRAZINE	122667		8.00E-001 I		8.00E-001 I		8.4E-002 C	7.8E-003 C	3.9E-003 C	7.2E+000 C	8.0E-001 C
DIQUAT	85007	2.20E-003 I					8.0E+001 N	8.0E+000 N	3.0E+000 N	4.5E+003 N	1.7E+002 N
**DISULFOTON	298044	4.00E-005 I					1.5E+000 N	1.5E-001 N	5.4E-002 N	8.2E+001 N	3.1E+000 N
1,4-DITHIANE	505293	1.00E-002 I					3.7E+002 N	3.7E+001 N	1.4E+001 N	2.0E+004 N	7.8E+002 N
DIURON	330541	2.00E-003 I					7.3E+001 N	7.3E+000 N	2.7E+000 N	4.1E+003 N	1.6E+002 N
ENDOSULFAN	115297	6.00E-003 I					2.2E+002 N	2.2E+001 N	8.1E+000 N	1.2E+004 N	4.7E+002 N
ENDRIN	72208	3.00E-004 I					1.1E+001 N	1.1E+000 N	4.1E-001 N	6.1E+002 N	2.3E+001 N
**EPICHLOROHYDRIN	106898	2.00E-003 H	9.90E-003 I	2.86E-004 I	4.20E-003 I	y	2.0E+000 N	1.0E+000 N	3.2E-001 C I	5.8E+002 C I	6.5E+001 C I
ETHION	563122	5.00E-004 I					1.8E+001 N	1.8E+000 N	6.8E-001 N	1.0E+003 N	3.9E+001 N
2-ETHOXYETHANOL	110805	4.00E-001 H		5.70E-002 I			1.5E+004 N	2.1E+002 N	5.4E+002 N	8.2E+005 N	3.1E+004 N
ETHYL ACETATE	141786	9.00E-001 I				y	5.5E+003 N	3.3E+003 N	1.2E+003 N	1.8E+006 N	7.0E+004 N
ETHYLBENZENE	100414	1.00E-001 I		2.90E-001 I		y	1.3E+003 N	1.1E+003 N	1.4E+002 N	2.0E+005 N	7.8E+003 N
ETHYLENE DIAMINE	107153	2.00E-002 H					7.3E+002 N	7.3E+001 N	2.7E+001 N	4.1E+004 N	1.6E+003 N
ETHYLENE GLYCOL	107211	2.00E+000 I					7.3E+004 N	7.3E+003 N	2.7E+003 N	4.1E+006 N	1.6E+005 N
ETHYLENE GLYCOL, MONOBUTYL ETHER	111762			5.70E-003 H				2.1E+001 N			
**ETHYLENE OXIDE	75218		1.00E+000 H		3.50E-001 H	y	2.3E-002 C	1.8E-002 C	3.2E-003 C	5.7E+000 C	6.4E-001 C
ETHYLENE THIOUREA	96457	8.00E-005 I	1.1E-001 H				6.1E-001 C I	5.7E-002 C I	2.9E-002 C I	5.2E+001 C I	5.8E+000 C I
ETHYL ETHER	60297	2.00E-001 I				y	1.2E+003 N	7.3E+002 N	2.7E+002 N	4.1E+005 N	1.6E+004 N
ETHYL METHACRYLATE	97632	9.00E-002 H				y	5.5E+002 N	3.3E+002 N	1.2E+002 N	1.8E+005 N	7.0E+003 N
FENAMIPHOS	22224926	2.50E-004 I					9.1E+000 N	9.1E-001 N	3.4E-001 N	5.1E+002 N	2.0E+001 N
FLUOMETURON	2164172	1.30E-002 I					4.7E+002 N	4.7E+001 N	1.8E+001 N	2.7E+004 N	1.0E+003 N
FLUORINE	7782414	6.00E-002 I					2.2E+003 N	2.2E+002 N	8.1E+001 N	1.2E+005 N	4.7E+003 N
FOMESAFEN	72178020		1.90E-001 I				3.5E-001 C	3.3E-002 C	1.7E-002 C	3.0E+001 C	3.4E+000 C
FONOFOS	944229	2.00E-003 I					7.3E+001 N	7.3E+000 N	2.7E+000 N	4.1E+003 N	1.6E+002 N
FORMALDEHYDE	50000	2.00E-001 I			4.50E-002 I		7.3E+003 N	1.4E-001 C	2.7E+002 N	4.1E+005 N	1.6E+004 N
FORMIC ACID	64186	2.00E+000 H					7.3E+004 N	7.3E+003 N	2.7E+003 N	4.1E+006 N	1.6E+005 N
FURAN	110009	1.00E-003 I				y	6.1E+000 N	3.7E+000 N	1.4E+000 N	2.0E+003 N	7.8E+001 N
FURAZOLIDONE	67458		3.80E+000 H				1.8E-002 C	1.6E-003 C	8.3E-004 C	1.5E+000 C	1.7E-001 C
FURFURAL	98011	3.00E-003 I		1.00E-002 A			1.1E+002 N	3.7E+001 N	4.1E+000 N	6.1E+003 N	2.3E+002 N
GLYCIDALDEHYDE	765344	4.00E-004 I		2.90E-004 H			1.5E+001 N	1.1E+000 N	5.4E-001 N	8.2E+002 N	3.1E+001 N
GLYPHOSATE	1071836	1.00E-001 I					3.7E+003 N	3.7E+002 N	1.4E+002 N	2.0E+005 N	7.8E+003 N
**HEPTACHLOR	76448	5.00E-004 I	4.50E+000 I		4.50E+000 I		1.5E-002 C	1.4E-003 C	7.0E-004 C	1.3E+000 C	1.4E-001 C
**HEPTACHLOR EPOXIDE	1024573	1.30E-005 I	9.10E+000 I		9.10E+000 I		7.4E-003 C	6.9E-004 C	3.5E-004 C	6.3E-001 C	7.0E-002 C
HEXABROMOBENZENE	87821	2.00E-003 I					7.3E+001 N	7.3E+000 N	2.7E+000 N	4.1E+003 N	1.6E+002 N
**HEXACHLOROBENZENE	118741	8.00E-004 I	1.60E+000 I		1.60E+000 I		4.2E-002 C	3.9E-003 C	2.0E-003 C	3.6E+000 C	4.0E-001 C
**HEXACHLOROBUTADIENE	87683	2.00E-004 H	7.80E-002 I		7.80E-002 I		8.6E-001 C I	8.0E-002 C I	4.0E-002 C I	7.3E+001 C I	8.2E+000 C I
ALPHA-HCH	319846		6.30E+000 I		6.30E+000 I		1.1E-002 C	9.9E-004 C	5.0E-004 C	9.1E-001 C	1.0E-001 C
BETA-HCH	319857		1.80E+000 I		1.80E+000 I		3.7E-002 C	3.5E-003 C	1.8E-003 C	3.2E+000 C	3.5E-001 C
GAMMA-HCH (LINDANE)	58899	3.00E-004 I	1.30E+000 H				5.2E-002 C	4.8E-003 C	2.4E-003 C	4.4E+000 C	4.9E-001 C
TECHNICAL HCH	608731		1.80E+000 I		1.80E+000 I		3.7E-002 C	3.5E-003 C	1.8E-003 C	3.2E+000 C	3.5E-001 C
**HEXACHLOROCYCLOPENTADIENE	77474	7.00E-003 I		2.00E-005 H			2.6E+002 N	7.3E-002 N	9.5E+000 N	1.4E+004 N	5.5E+002 N
HEXACHLORODIBENZODIOXIN MIX	19408743		6.20E+003 I		4.55E+003 I		1.1E-005 C	1.4E-006 C	5.1E-007 C	9.2E-004 C	1.0E-004 C

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**HEXACHLOROETHANE	67721	1.00E-003 I	1.40E-002 I		1.40E-002 I		4.8E+000 C I	4.5E-001 C I	2.3E-001 C I	4.1E+002 C I	4.6E+001 C I
HEXACHLOROPHENE	70304	3.00E-004 I					1.1E+001 N	1.1E+000 N	4.1E-001 N	6.1E+002 N	2.3E+001 N
1,6-HEXAMETHYLENE DIISOCYANATE	822060			2.90E 006 I				1.1E-002 N			
HEXANE	110543	6.00E-002 H		5.71E-002 I		y	3.5E+002 N	2.1E+002 N	8.1E+001 N	1.2E+005 N	4.7E+003 N
2-HEXANONE	591786	4.00E-002 E		1.4E-003 E			1.5E+003 N	5.1E+000 N	5.4E+001 N	8.2E+004 N	3.1E+003 N
HEXAZINONE	51235042	3.30E-002 I					1.2E+003 N	1.2E+002 N	4.5E+001 N	6.7E+004 N	2.6E+003 N
HMX	2691410	5.00E-002 I					1.8E+003 N	1.8E+002 N	6.8E+001 N	1.0E+005 N	3.9E+003 N
HYDRAZINE	302012		3.00E+000 I		1.70E+001 I		2.2E-002 C	3.7E-004 C	1.1E-003 C	1.9E+000 C	2.1E-001 C
HYDROGEN CHLORIDE	7647010			5.70E-003 I				2.1E+001 N			
HYDROGEN SULFIDE	7783064	3.00E-003 I		2.85E-004 I			1.1E+002 N	1.0E+000 N	4.1E+000 N	6.1E+003 N	2.3E+002 N
HYDROQUINONE	123319	4.00E-002 H					1.5E+003 N	1.5E+002 N	5.4E+001 N	8.2E+004 N	3.1E+003 N
IRON	7439896	3.00E-001 E					1.1E+004 N	1.1E+003 N	4.1E+002 N	6.1E+005 N	2.3E+004 N
ISOBUTANOL	78831	3.00E-001 I				y	1.8E+003 N	1.1E+003 N	4.1E+002 N	6.1E+005 N	2.3E+004 N
ISOPHORONE	78591	2.00E-001 I	9.50E-004 I				7.0E+001 C	6.6E+000 C	3.3E+000 C	6.0E+003 C	6.7E+002 C
ISOPROPALIN	33820530	1.50E-002 I					5.5E+002 N	5.5E+001 N	2.0E+001 N	3.1E+004 N	1.2E+003 N
ISOPROPYL METHYL PHOSPHONIC ACID	1832548	1.00E-001 I					3.7E+003 N	3.7E+002 N	1.4E+002 N	2.0E+005 N	7.8E+003 N
**TETRAETHYLLEAD	78002	1.00E-007 I					3.7E-003 N	3.7E-004 N	1.4E-004 N	2.0E-001 N	7.8E-003 N
LITHIUM	7439932	2.00E-002 E					7.3E+002 N	7.3E+001 N	2.7E+001 N	4.1E+004 N	1.6E+003 N
MALATHION	121755	2.00E-002 I					7.3E+002 N	7.3E+001 N	2.7E+001 N	4.1E+004 N	1.6E+003 N
MALEIC ANHYDRIDE	108316	1.00E-001 I					3.7E+003 N	3.7E+002 N	1.4E+002 N	2.0E+005 N	7.8E+003 N
MANGANESE-NONFOOD	7439965	2.00E-002 I		1.43E-005 I			7.3E+002 N	5.2E-002 N	2.7E+001 N	4.1E+004 N	1.6E+003 N
MANGANESE-FOOD	7439965	1.40E-001 I		1.43E-005 I			5.1E+003 N	5.2E-002 N	1.9E+002 N	2.9E+005 N	1.1E+004 N
MEPHOSFOLAN	950107	9.00E-005 H					3.3E+000 N	3.3E-001 N	1.2E-001 N	1.8E+002 N	7.0E+000 N
MEPIQUAT CHLORIDE	24307264	3.00E-002 I					1.1E+003 N	1.1E+002 N	4.1E+001 N	6.1E+004 N	2.3E+003 N
MERCURIC CHLORIDE	7487947	3.00E-004 I					1.1E+001 N	1.1E+000 N	4.1E-001 N	6.1E+002 N	2.3E+001 N
MERCURY (INORGANIC)	7439976			8.60E-005 I				3.1E-001 N			
METHYLMERCURY	22967926	1.00E-004 I					3.7E+000 N	3.7E-001 N	1.4E-001 N	2.0E+002 N	7.8E+000 N
METHACRYLONITRILE	126987	1.00E-004 I		2.00E-004 A		y	1.0E+000 N	7.3E-001 N	1.4E-001 N	2.0E+002 N	7.8E+000 N
METHANOL	67561	5.00E-001 I					1.8E+004 N	1.8E+003 N	6.8E+002 N	1.0E+006 N	3.9E+004 N
METHIDATHION	950378	1.00E-003 I					3.7E+001 N	3.7E+000 N	1.4E+000 N	2.0E+003 N	7.8E+001 N
METHOXYCHLOR	72435	5.00E-003 I					1.8E+002 N	1.8E+001 N	6.8E+000 N	1.0E+004 N	3.9E+002 N
METHYL ACETATE	79209	1.00E+000 H				y	6.1E+003 N	3.7E+003 N	1.4E+003 N	2.0E+006 N	7.8E+004 N
METHYL ACRYLATE	96333	3.00E-002 A				y	1.8E+002 N	1.1E+002 N	4.1E+001 N	6.1E+004 N	2.3E+003 N
2-METHYLANILINE	95534		2.40E-001 H				2.8E-001 C	2.6E-002 C	1.3E-002 C	2.4E+001 C	2.7E+000 C
4-(2-METHYL-4-CHLOROPHENOXY) BUTYRIC ACID	94815	1.00E-002 I					3.7E+002 N	3.7E+001 N	1.4E+001 N	2.0E+004 N	7.8E+002 N
2-METHYL-4-CHLOROPHENOXYACETIC ACID (MCPA)	94746	5.00E-004 I					1.8E+001 N	1.8E+000 N	6.8E-001 N	1.0E+003 N	3.9E+001 N
2-(2-METHYL-4-CHLOROPHENOXY)PROPIONIC ACID (MCP	93652	1.00E-003 I					3.7E+001 N	3.7E+000 N	1.4E+000 N	2.0E+003 N	7.8E+001 N
METHYLCYCLOHEXANE	108872			8.60E-001 H		y	6.3E+003 N	3.1E+003 N			
METHYLENE BROMIDE	74953	1.00E-002 A				y	6.1E+001 N	3.7E+001 N	1.4E+001 N	2.0E+004 N	7.8E+002 N
METHYLENE CHLORIDE	75092	6.00E-002 I	7.50E-003 I	8.60E-001 H	1.65E-003 I	y	4.1E+000 C	3.8E+000 C	4.2E-001 C	7.6E+002 C	8.5E+001 C
4,4'-METHYLENE BIS(2-CHLOROANILINE)	101144	7.00E-004 H	1.30E-001 H		1.30E-001 H		5.2E-001 C	4.8E-002 C	2.4E-002 C	4.4E+001 C	4.9E+000 C
4,4'-METHYLENE BIS(N N'-DIMETHYL)ANILINE	101611		4.60E-002 I				1.5E+000 C	1.4E-001 C	6.9E-002 C	1.2E+002 C	1.4E+001 C
4,4'-METHYLENEDIPHENYL ISOCYANATE	101688			1.7E-004 I				6.2E-001 N			
METHYL ETHYL KETONE (2-BUTANONE)	78933	6.00E-001 I		2.86E-001 I		y	1.9E+003 N	1.0E+003 N	8.1E+002 N	1.2E+006 N	4.7E+004 N
METHYL HYDRAZINE	60344		1.10E+000 W				6.1E-002 C	5.7E-003 C	2.9E-003 C	5.2E+000 C	5.8E-001 C

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**METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE)	108101	8.00E-002	H			2.00E-002	A			y	1.4E+002	N	7.3E+001	N	1.1E+002	N	1.6E+005	N	6.3E+003	N
METHYL METHACRYLATE	80626	1.40E+000	I			2.00E-001	I			y	1.4E+003	N	7.3E+002	N	1.9E+003	N	2.9E+006	N	1.1E+005	N
2-METHYL-5-NITROANILINE	99558			3.30E-002	H						2.0E+000	C	1.9E-001	C	9.6E-002	C	1.7E+002	C	1.9E+001	C
METHYL PARATHION	298000	2.50E-004	I								9.1E+000	N	9.1E-001	N	3.4E-001	N	5.1E+002	N	2.0E+001	N
2-METHYLPHENOL	95487	5.00E-002	I								1.8E+003	N	1.8E+002	N	6.8E+001	N	1.0E+005	N	3.9E+003	N
3-METHYLPHENOL	108394	5.00E-002	I								1.8E+003	N	1.8E+002	N	6.8E+001	N	1.0E+005	N	3.9E+003	N
4-METHYLPHENOL	106445	5.00E-003	H								1.8E+002	N	1.8E+001	N	6.8E+000	N	1.0E+004	N	3.9E+002	N
METHYLSTYRENE MIX	25013154	6.00E-003	A			1.00E-002	A			y	5.5E+001	N	3.7E+001	N	8.1E+000	N	1.2E+004	N	4.7E+002	N
ALPHA-METHYLSTYRENE	98839	7.00E-002	A							y	4.3E+002	N	2.6E+002	N	9.5E+001	N	1.4E+005	N	5.5E+003	N
METHYL TERT-BUTYL ETHER	1634044					8.57E-001	I			y	6.3E+003	N	3.1E+003	N						
METOLACHLOR (DUAL)	51218452	1.50E-001	I								5.5E+003	N	5.5E+002	N	2.0E+002	N	3.1E+005	N	1.2E+004	N
**MIREX	2385855	2.00E-004	I								7.3E+000	N	7.3E-001	N	2.7E-001	N	4.1E+002	N	1.6E+001	N
MOLYBDENUM	7439987	5E-003	I								1.8E+002	N	1.8E+001	N	6.8E+000	N	1.0E+004	N	3.9E+002	N
**MONOCHLORAMINE	10599903	1E-001	I			1.00E-001	H				3.7E+003	N	3.7E+002	N	1.4E+002	N	2.0E+005	N	7.8E+003	N
NALED	300765	2E-003	I								7.3E+001	N	7.3E+000	N	2.7E+000	N	4.1E+003	N	1.6E+002	N
NICKEL REFINERY DUST								8.4E-001	I				7.5E-003	C						
NICKEL	7440020	2.00E-002	I								7.3E+002	N	7.3E+001	N	2.7E+001	N	4.1E+004	N	1.6E+003	N
NITRATE	14797558	1.60E+000	I								5.8E+004	N	5.8E+003	N	2.2E+003	N	3.3E+006	N	1.3E+005	N
NITRIC OXIDE	10102439	1.00E-001	W							y	6.1E+002	N	3.7E+002	N	1.4E+002	N	2.0E+005	N	7.8E+003	N
NITRITE	14797650	1.00E-001	I								3.7E+003	N	3.7E+002	N	1.4E+002	N	2.0E+005	N	7.8E+003	N
2-NITROANILINE	88744					5.70E-005	H						2.1E-001	N						
NITROBENZENE	98953	5.00E-004	I			6.00E-004	A			y	3.5E+000	N	2.2E+000	N	6.8E-001	N	1.0E+003	N	3.9E+001	N
NITROFURANTOIN	67209	7.00E-002	H								2.6E+003	N	2.6E+002	N	9.5E+001	N	1.4E+005	N	5.5E+003	N
NITROFURAZONE	59870			1.50E+000	H						4.5E-002	C	4.2E-003	C	2.1E-003	C	3.8E+000	C	4.3E-001	C
NITROGEN DIOXIDE	10102440	1.00E+000	W							y	6.1E+003	N	3.7E+003	N	1.4E+003	N	2.0E+006	N	7.8E+004	N
NITROGLYCERIN	55630			1.4E-002	E						4.8E+000	C	4.5E-001	C	2.3E-001	C	4.1E+002	C	4.6E+001	C
4-NITROPHENOL	100027	8.00E-003	E								2.9E+002	N	2.9E+001	N	1.1E+001	N	1.6E+004	N	6.3E+002	N
2-NITROPROPANE	79469					5.70E-003	I	9.40E+000	H	y	1.3E-003	C	6.7E-004	C						
**N-NITROSO-DI-N-BUTYLAMINE	924163			5.40E+000	I			5.60E+000	I	y	1.9E-003	C	1.1E-003	C	5.8E-004	C	1.1E+000	C	1.2E-001	C
N-NITROSODIETHANOLAMINE	1116547			2.80E+000	I						2.4E-002	C	2.2E-003	C	1.1E-003	C	2.0E+000	C	2.3E-001	C
N-NITROSODIETHYLAMINE	55185			1.50E+002	I			1.50E+002	I		4.5E-004	C	4.2E-005	C	2.1E-005	C	3.8E-002	C	4.3E-003	C
N-NITROSODIMETHYLAMINE	62759			5.10E+001	I			5.10E+001	I		1.3E-003	C	1.2E-004	C	6.2E-005	C	1.1E-001	C	1.3E-002	C
N-NITROSODIPHENYLAMINE	86306			4.90E-003	I						1.4E+001	C	1.3E+000	C	6.4E-001	C	1.2E+003	C	1.3E+002	C
N-NITROSODIPROPYLAMINE	621647			7.00E+000	I						9.6E-003	C	8.9E-004	C	4.5E-004	C	8.2E-001	C	9.1E-002	C
N-NITROSO-N-ETHYLUREA	759739			1.40E+002	H						4.8E-004	C	4.5E-005	C	2.3E-005	C	4.1E-002	C	4.6E-003	C
N-NITROSO-N-METHYLETHYLAMINE	10595956			2.20E+001	I						3.0E-003	C	2.8E-004	C	1.4E-004	C	2.6E-001	C	2.9E-002	C
N-NITROSOPYRROLIDINE	930552			2.10E+000	I			2.10E+000	I		3.2E-002	C	3.0E-003	C	1.5E-003	C	2.7E+000	C	3.0E-001	C
M-NITROTOLUENE	99081	2.00E-002	E							y	1.2E+002	N	7.3E+001	N	2.7E+001	N	4.1E+004	N	1.6E+003	N
O-NITROTOLUENE	88722	1.00E-002	H							y	6.1E+001	N	3.7E+001	N	1.4E+001	N	2.0E+004	N	7.8E+002	N
P-NITROTOLUENE	99990	1.00E-002	H							y	6.1E+001	N	3.7E+001	N	1.4E+001	N	2.0E+004	N	7.8E+002	N
NUSTAR	85509199	7.00E-004	I								2.6E+001	N	2.6E+000	N	9.5E-001	N	1.4E+003	N	5.5E+001	N
ORYZALIN	19044883	5.00E-002	I								1.8E+003	N	1.8E+002	N	6.8E+001	N	1.0E+005	N	3.9E+003	N
OXADIAZON	19666309	5.00E-003	I								1.8E+002	N	1.8E+001	N	6.8E+000	N	1.0E+004	N	3.9E+002	N
OXAMYL	23135220	2.50E-002	I								9.1E+002	N	9.1E+001	N	3.4E+001	N	5.1E+004	N	2.0E+003	N
OXYFLUORFEN	42874033	3.00E-003	I								1.1E+002	N	1.1E+001	N	4.1E+000	N	6.1E+003	N	2.3E+002	N

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Basis: C = Carcinogenic effects N = Noncarcinogenic effects I = RBC at HI of 0.1 < RBC-c

Chemical	CAS	RfDo mg/kg/d		CSFo 1/mg/kg/d		RfDi mg/kg/d		CSFi 1/mg/kg/d		VOC	Risk-based concentrations: Tap water ug/l		Ambient air ug/m3		Fish mg/kg		Soil Industrial mg/kg		Residential mg/kg	
PARAQUAT DICHLORIDE	1910425	4.50E-003	I								1.6E+002	N	1.6E+001	N	6.1E+000	N	9.2E+003	N	3.5E+002	N
PARATHION	56382	6.00E-003	H								2.2E+002	N	2.2E+001	N	8.1E+000	N	1.2E+004	N	4.7E+002	N
**PENTACHLOROBENZENE	608935	8.00E-004	I								2.9E+001	N	2.9E+000	N	1.1E+000	N	1.6E+003	N	6.3E+001	N
**PENTACHLORONITROBENZENE	82688	3.00E-003	I	2.60E-001	H						2.6E-001	C	2.4E-002	C	1.2E-002	C	2.2E+001	C	2.5E+000	C
PENTACHLOROPHENOL	87865	3.00E-002	I	1.20E-001	I						5.6E-001	C	5.2E-002	C	2.6E-002	C	4.8E+001	C	5.3E+000	C
PERMETHRIN	52645531	5.00E-002	I								1.8E+003	N	1.8E+002	N	6.8E+001	N	1.0E+005	N	3.9E+003	N
PHENOL	108952	6.00E-001	I								2.2E+004	N	2.2E+003	N	8.1E+002	N	1.2E+006	N	4.7E+004	N
M-PHENYLENEDIAMINE	108452	6.00E-003	I								2.2E+002	N	2.2E+001	N	8.1E+000	N	1.2E+004	N	4.7E+002	N
O-PHENYLENEDIAMINE	95545			4.70E-002	H						1.4E+000	C	1.3E-001	C	6.7E-002	C	1.2E+002	C	1.4E+001	C
P-PHENYLENEDIAMINE	106503	1.90E-001	H								6.9E+003	N	6.9E+002	N	2.6E+002	N	3.9E+005	N	1.5E+004	N
2-PHENYLPHENOL	90437			1.90E-003	H						3.5E+001	C	3.3E+000	C	1.7E+000	C	3.0E+003	C	3.4E+002	C
PHOSPHINE	7803512	3.00E-004	I			8.60E-005	I				1.1E+001	N	3.1E-001	N	4.1E-001	N	6.1E+002	N	2.3E+001	N
PHOSPHORIC ACID	7664382					2.90E-003	I						1.1E+001	N						
PHOSPHORUS (WHITE)	7723140	2.00E-005	I								7.3E-001	N	7.3E-002	N	2.7E-002	N	4.1E+001	N	1.5E+000	N
P-PHTHALIC ACID	100210	1.00E+000	H								3.7E+004	N	3.7E+003	N	1.4E+003	N	2.0E+006	N	7.8E+004	N
PHTHALIC ANHYDRIDE	85449	2.00E+000	I			3.43E-002	H				7.3E+004	N	1.3E+002	N	2.7E+003	N	4.1E+006	N	1.5E+005	N
POLYBROMINATED BIPHENYLS		7.00E-006	H	8.90E+000	H						7.5E-003	C	7.0E-004	C	3.5E-004	C	6.4E-001	C	7.2E-002	C !
POLYCHLORINATED BIPHENYLS	1336363			2.00E+000	I			2.00E+000	I		3.3E-002	C	3.1E-003	C	1.6E-003	C	2.9E+000	C	3.2E-001	C
AROCLOR-1016	12674112	7.00E-005	I	7.00E-002	I			7.00E-002	I		9.6E-001	C !	8.9E-002	C !	4.5E-002	C !	8.2E+001	C !	5.5E+000	N
AROCLOR-1221	11104282			2.00E+000	I			2.00E+000	I		3.3E-002	C	3.1E-003	C	1.6E-003	C	2.9E+000	C	3.2E-001	C
AROCLOR-1232	11141165			2.00E+000	I			2.00E+000	I		3.3E-002	C	3.1E-003	C	1.6E-003	C	2.9E+000	C	3.2E-001	C
AROCLOR-1242	53469219			2.00E+000	I			2.00E+000	I		3.3E-002	C	3.1E-003	C	1.6E-003	C	2.9E+000	C	3.2E-001	C
AROCLOR-1248	12672296			2.00E+000	I			2.00E+000	I		3.3E-002	C	3.1E-003	C	1.6E-003	C	2.9E+000	C	3.2E-001	C
AROCLOR-1254	11097691	2.00E-005	I	2.00E+000	I			2.00E+000	I		3.3E-002	C	3.1E-003	C	1.6E-003	C	2.9E+000	C	3.2E-001	C !
AROCLOR-1260	11096825			2.00E+000	I			2.00E+000	I		3.3E-002	C	3.1E-003	C	1.6E-003	C	2.9E+000	C	3.2E-001	C
POLYCHLORINATED TERPHENYLS	61788338			4.50E+000	E						1.5E-002	C	1.4E-003	C	7.0E-004	C	1.3E+000	C	1.4E-001	C
POLYNUCLEAR AROMATIC HYDROCARBONS:																				
**ACENAPHTHENE	83329	6.00E-002	I							y	3.7E+002	N	2.2E+002	N	8.1E+001	N	1.2E+005	N	4.7E+003	N
**ANTHRACENE	120127	3.00E-001	I							y	1.8E+003	N	1.1E+003	N	4.1E+002	N	6.1E+005	N	2.3E+004	N
BENZ[A]ANTHRACENE	56553			7.30E-001	E						9.2E-002	C	8.6E-003	C	4.3E-003	C	7.8E+000	C	8.7E-001	C
BENZO[B]FLUORANTHENE	205992			7.30E-001	E						9.2E-002	C	8.6E-003	C	4.3E-003	C	7.8E+000	C	8.7E-001	C
BENZO[K]FLUORANTHENE	207089			7.30E-002	E						9.2E-001	C	8.6E-002	C	4.3E-002	C	7.8E+001	C	8.7E+000	C
BENZO[A]PYRENE	50328			7.30E+000	I			3.10E+000	E		9.2E-003	C	2.0E-003	C	4.3E-004	C	7.8E-001	C	8.7E-002	C
CARBAZOLE	86748			2.00E-002	H						3.3E+000	C	3.1E-001	C	1.6E-001	C	2.9E+002	C	3.2E+001	C
CHRYSENE	218019			7.30E-003	E						9.2E+000	C	8.6E-001	C	4.3E-001	C	7.8E+002	C	8.7E+001	C
DIBENZ[A,H]ANTHRACENE	53703			7.30E+000	E						9.2E-003	C	8.6E-004	C	4.3E-004	C	7.8E-001	C	8.7E-002	C
DIBENZOFURAN	132649	4.00E-003	E							y	2.4E+001	N	1.5E+001	N	5.4E+000	N	8.2E+003	N	3.1E+002	N
FLUORANTHENE	206440	4.00E-002	I								1.5E+003	N	1.5E+002	N	5.4E+001	N	8.2E+004	N	3.1E+003	N
**FLUORENE	86737	4.00E-002	I							y	2.4E+002	N	1.5E+002	N	5.4E+001	N	8.2E+004	N	3.1E+003	N
INDENO(1,2,3-C,D)PYRENE	193395			7.30E-001	E						9.2E-002	C	8.6E-003	C	4.3E-003	C	7.8E+000	C	8.7E-001	C
2-METHYLNAPHTHALENE	91576	2.00E-002	E							y	1.2E+002	N	7.3E+001	N	2.7E+001	N	4.1E+004	N	1.6E+003	N
**NAPHTHALENE	91203	2.00E-002	I			9.00E-004	I			y	6.5E+000	N	3.3E+000	N	2.7E+001	N	4.1E+004	N	1.6E+003	N
**PYRENE	129000	3.00E-002	I							y	1.8E+002	N	1.1E+002	N	4.1E+001	N	6.1E+004	N	2.3E+003	N
PROMETON	1610180	1.50E-002	I								5.5E+002	N	5.5E+001	N	2.0E+001	N	3.1E+004	N	1.2E+003	N
PROMETRYN	7287196	4.00E-003	I								1.5E+002	N	1.5E+001	N	5.4E+000	N	8.2E+003	N	3.1E+002	N

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Chemical	CAS	RfDo mg/kg/d		CSFo 1/mg/kg/d		RfDi mg/kg/d		CSFi 1/mg/kg/d		VOC	Risk-based concentrations: Tap water ug/l		Ambient air ug/m3		Fish mg/kg		Soil industrial mg/kg		Residential mg/kg	
PROPACHLOR	1918167	1.30E-002	I								4.7E+002	N	4.7E+001	N	1.8E+001	N	2.7E+004	N	1.0E+003	N
PROPANIL	709988	5.00E-003	I								1.8E+002	N	1.8E+001	N	6.8E+000	N	1.0E+004	N	3.9E+002	N
PROPARGITE	2312358	2.00E-002	I								7.3E+002	N	7.3E+001	N	2.7E+001	N	4.1E+004	N	1.6E+003	N
N-PROPYLBENZENE		1.00E-002	E							y	6.1E+001	N	3.7E+001	N	1.4E+001	N	2.0E+004	N	7.8E+002	N
PROPYLENE GLYCOL	57556	2.00E+001	H								7.3E+005	N	7.3E+004	N	2.7E+004	N	4.1E+007	N	1.6E+006	N
PROPYLENE GLYCOL MONOETHYL ETHER	52125538	7.00E-001	H								2.6E+004	N	2.6E+003	N	9.5E+002	N	1.4E+006	N	5.5E+004	N
PROPYLENE GLYCOL MONOMETHYL ETHER	107982	7.00E-001	H			5.70E-001	I				2.6E+004	N	2.1E+003	N	9.5E+002	N	1.4E+006	N	5.5E+004	N
PURSUIT	81335775	2.50E-001	I								9.1E+003	N	9.1E+002	N	3.4E+002	N	5.1E+005	N	2.0E+004	N
PYRIDINE	110861	1.00E-003	I								3.7E+001	N	3.7E+000	N	1.4E+000	N	2.0E+003	N	7.8E+001	N
QUINOLINE	91225			1.20E+001	H						5.6E-003	C	5.2E-004	C	2.6E-004	C	4.8E-001	C	5.3E-002	C
RDX	121824	3.00E-003	I	1.10E-001	I						6.1E-001	C	5.7E-002	C	2.9E-002	C	5.2E+001	C	5.8E+000	C
RESMETHRIN	10453868	3.00E-002	I								1.1E+003	N	1.1E+002	N	4.1E+001	N	6.1E+004	N	2.3E+003	N
**RONNEL	299843	5.00E-002	H								1.8E+003	N	1.8E+002	N	6.8E+001	N	1.0E+005	N	3.9E+003	N
ROTENONE	83794	4.00E-003	I								1.5E+002	N	1.5E+001	N	5.4E+000	N	8.2E+003	N	3.1E+002	N
SELENIOUS ACID	7783008	5.00E-003	I								1.8E+002	N	1.8E+001	N	6.8E+000	N	1.0E+004	N	3.9E+002	N
SELENIUM	7782492	5.00E-003	I								1.8E+002	N	1.8E+001	N	6.8E+000	N	1.0E+004	N	3.9E+002	N
SILVER	7440224	5.00E-003	I								1.8E+002	N	1.8E+001	N	6.8E+000	N	1.0E+004	N	3.9E+002	N
SIMAZINE	122349	5.00E-003	I	1.20E-001	H						5.6E-001	C	5.2E-002	C	2.6E-002	C	4.8E+001	C	5.3E+000	C
SODIUM AZIDE	26628228	4.00E-003	I								1.5E+002	N	1.5E+001	N	5.4E+000	N	8.2E+003	N	3.1E+002	N
SODIUM DIETHYLDITHIOCARBAMATE	148185	3.00E-002	I	2.70E-001	H						2.5E-001	C	2.3E-002	C	1.2E-002	C	2.1E+001	C	2.4E+000	C
STRONTIUM, STABLE	7440246	6.00E-001	I								2.2E+004	N	2.2E+003	N	8.1E+002	N	1.2E+006	N	4.7E+004	N
STRYCHNINE	57249	3.00E-004	I								1.1E+001	N	1.1E+000	N	4.1E-001	N	6.1E+002	N	2.3E+001	N
STYRENE	100425	2.00E-001	I			2.86E-001	I			y	1.6E+003	N	1.0E+003	N	2.7E+002	N	4.1E+005	N	1.6E+004	N
2,3,7,8-TETRACHLORODIBENZODIOXIN	1746016			1.50E+005	H			1.50E+005	H		4.5E-007	C	4.2E-008	C	2.1E-008	C	3.8E-005	C	4.3E-006	C
**1,2,4,5-TETRACHLOROBENZENE	95943	3.00E-004	I								1.1E+001	N	1.1E+000	N	4.1E-001	N	6.1E+002	N	2.3E+001	N
1,1,1,2-TETRACHLOROETHANE	630206	3.00E-002	I	2.60E-002	I			2.60E-002	I	y	4.1E-001	C	2.4E-001	C	1.2E-001	C	2.2E+002	C	2.5E+001	C
1,1,2,2-TETRACHLOROETHANE	79345	6.00E-002	E	2.00E-001	I			2.00E-001	I	y	5.3E-002	C	3.1E-002	C	1.6E-002	C	2.9E+001	C	3.2E+000	C
TETRACHLOROETHENE	127184	1.00E-002	I	5.20E-002	E	1.4E-001	E	2.00E-003	E	y	1.1E+000	C	3.1E+000	C	6.1E-002	C	1.1E+002	C	1.2E+001	C
2,3,4,6-TETRACHLOROPHENOL	58902	3.00E-002	I								1.1E+003	N	1.1E+002	N	4.1E+001	N	6.1E+004	N	2.3E+003	N
**P,A,A,A-TETRACHLOROTOLUENE	5216251			2.00E+001	H						3.3E-003	C	3.1E-004	C	1.6E-004	C	2.9E-001	C	3.2E-002	C
1,1,1,2-TETRAFLUOROETHANE	811972					2.29E+001	I			y	1.7E+005	N	8.4E+004	N						
**TETRAHYDROFURAN	109999	2.00E-002	E	7.6E-003	E	8.6E-002	E	6.8E-003	E		8.8E+000	C	9.2E-001	C	4.2E-001	C	7.5E+002	C	8.4E+001	C
TETRYL	479458	1.00E-002	H								3.7E+002	N	3.7E+001	N	1.4E+001	N	2.0E+004	N	7.8E+002	N
THALLIC OXIDE	1314325	7.00E-005	W								2.6E+000	N	2.6E-001	N	9.5E-002	N	1.4E+002	N	5.5E+000	N
THALLIUM	7440280	7.00E-005	O								2.6E+000	N	2.6E-001	N	9.5E-002	N	1.4E+002	N	5.5E+000	N
THALLIUM ACETATE	563688	9.00E-005	I								3.3E+000	N	3.3E-001	N	1.2E-001	N	1.8E+002	N	7.0E+000	N
THALLIUM CARBONATE	6533739	8.00E-005	I								2.9E+000	N	2.9E-001	N	1.1E-001	N	1.6E+002	N	6.3E+000	N
THALLIUM CHLORIDE	7791120	8.00E-005	I								2.9E+000	N	2.9E-001	N	1.1E-001	N	1.6E+002	N	6.3E+000	N
THALLIUM NITRATE	10102451	9.00E-005	I								3.3E+000	N	3.3E-001	N	1.2E-001	N	1.8E+002	N	7.0E+000	N
THALLIUM SULFATE (2:1)	7446186	8.00E-005	I								2.9E+000	N	2.9E-001	N	1.1E-001	N	1.6E+002	N	6.3E+000	N
THIOBENCARB	28249776	1.00E-002	I								3.7E+002	N	3.7E+001	N	1.4E+001	N	2.0E+004	N	7.8E+002	N
TIN	7440315	6.00E-001	H								2.2E+004	N	2.2E+003	N	8.1E+002	N	1.2E+006	N	4.7E+004	N

Sources: I = IRIS H = HEAST A = HEAST Alternate W = Withdrawn from IRIS or HEAST E = EPA-NCEA provisional value O = other

Basis: C = Carcinogenic effects N = Noncarcinogenic effects I = RBC at HI of 0.1 < RBC-c

Chemical	CAS	RfDo mg/kg/d		CSFo 1/mg/kg/d		RfDi mg/kg/d		CSFi 1/mg/kg/d		VOC	Risk-based concentrations: Tap water ug/l		Ambient air ug/m3		Fish mg/kg		Soil Industrial mg/kg		Residential mg/kg	
TITANIUM	7440326	4.00E+000	E			8.60E-003	E				1.5E+005	N	3.1E+001	N	5.4E+003	N	8.2E+006	N	3.1E+005	N
TITANIUM DIOXIDE	13463677	4.00E+000	E			8.60E-003	E				1.5E+005	N	3.1E+001	N	5.4E+003	N	8.2E+006	N	3.1E+005	N
TOLUENE	108883	2.00E-001	I			1.14E-001	I			y	7.5E+002	N	4.2E+002	N	2.7E+002	N	4.1E+005	N	1.5E+004	N
TOLUENE-2,4-DIAMINE	95807			3.20E+000	H						2.1E-002	C	2.0E-003	C	9.9E-004	C	1.8E+000	C	2.0E-001	C
TOLUENE-2,5-DIAMINE	95705	6.00E-001	H								2.2E+004	N	2.2E+003	N	8.1E+002	N	1.2E+006	N	4.7E+004	N
TOLUENE-2,6-DIAMINE	823405	2.00E-001	H								7.3E+003	N	7.3E+002	N	2.7E+002	N	4.1E+005	N	1.5E+004	N
P-TOLUIDINE	106490			1.90E-001	H						3.5E-001	C	3.3E-002	C	1.7E-002	C	3.0E+001	C	3.4E+000	C
**TOXAPHENE	8001352			1.10E+000	I			1.10E+000	I		6.1E-002	C	5.7E-003	C	2.9E-003	C	5.2E+000	C	5.8E-001	C
**1,2,4-TRIBROMOBENZENE	615543	5.00E-003	I								1.8E+002	N	1.8E+001	N	6.8E+000	N	1.0E+004	N	3.9E+002	N
TRIBUTYLTIN OXIDE	56359	3.00E-004	I								1.1E+001	N	1.1E+000	N	4.1E-001	N	6.1E+002	N	2.3E+001	N
2,4,6-TRICHLOROANILINE	634935			3.40E-002	H						2.0E+000	C	1.8E-001	C	9.3E-002	C	1.7E+002	C	1.9E+001	C
1,2,4-TRICHLOROBENZENE	120821	1.00E-002	I			5.70E-002	H			y	1.9E+002	N	2.1E+002	N	1.4E+001	N	2.0E+004	N	7.8E+002	N
1,1,1-TRICHLOROETHANE	71556	2.00E-002	E			2.86E-001	E			y	5.4E+002	N	1.0E+003	N	2.7E+001	N	4.1E+004	N	1.5E+003	N
1,1,2-TRICHLOROETHANE	79005	4.00E-003	I	5.70E-002	I			5.60E-002	I	y	1.9E-001	C	1.1E-001	C	5.5E-002	C	1.0E+002	C	1.1E+001	C
TRICHLOROETHENE	79016	6.00E-003	E	1.10E-002	E			6.00E-003	E	y	1.6E+000	C	1.0E+000	C	2.9E-001	C	5.2E+002	C	5.8E+001	C !
TRICHLOROFLUOROMETHANE	75694	3.00E-001	I			2.00E-001	A			y	1.3E+003	N	7.3E+002	N	4.1E+002	N	6.1E+005	N	2.3E+004	N
2,4,5-TRICHLOROPHENOL	95954	1.00E-001	I								3.7E+003	N	3.7E+002	N	1.4E+002	N	2.0E+005	N	7.8E+003	N
2,4,6-TRICHLOROPHENOL	88062			1.10E-002	I			1.00E-002	I		6.1E+000	C	6.3E-001	C	2.9E-001	C	5.2E+002	C	5.8E+001	C
2,4,5-T	93765	1.00E-002	I								3.7E+002	N	3.7E+001	N	1.4E+001	N	2.0E+004	N	7.8E+002	N
2-(2,4,5-TRICHLOROPHENOXY)PROPIONIC ACID	93721	8.00E-003	I								2.9E+002	N	2.9E+001	N	1.1E+001	N	1.6E+004	N	6.3E+002	N
1,1,2-TRICHLOROPROPANE	598776	5.00E-003	I							y	3.0E+001	N	1.8E+001	N	6.8E+000	N	1.0E+004	N	3.9E+002	N
1,2,3-TRICHLOROPROPANE	96184	6.00E-003	I	7.00E+000	H					y	1.5E-003	C	8.9E-004	C	4.5E-004	C	8.2E-001	C	9.1E-002	C
1,2,3-TRICHLOROPROPENE	96195	5.00E-003	H							y	3.0E+001	N	1.8E+001	N	6.8E+000	N	1.0E+004	N	3.9E+002	N
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76131	3.00E+001	I			8.60E+000	H			y	5.9E+004	N	3.1E+004	N	4.1E+004	N	6.1E+007	N	2.3E+006	N
1,2,4-TRIMETHYLBENZENE	95636	5.00E-002	E			1.70E-003	E			y	1.2E+001	N	6.2E+000	N	6.8E+001	N	1.0E+005	N	3.9E+003	N
1,3,5-TRIMETHYLBENZENE	108678	5.00E-002	E			1.70E-003	E			y	1.2E+001	N	6.2E+000	N	6.8E+001	N	1.0E+005	N	3.9E+003	N
TRIMETHYL PHOSPHATE	512561			3.70E-002	H						1.8E+000	C	1.7E-001	C	8.5E-002	C	1.5E+002	C	1.7E+001	C
1,3,5-TRINITROBENZENE	99354	3.00E-002	I								1.1E+003	N	1.1E+002	N	4.1E+001	N	6.1E+004	N	2.3E+003	N
2,4,6-TRINITROTOLUENE	118967	5.00E-004	I	3.00E-002	I						2.2E+000	C I	2.1E-001	C I	1.1E-001	C I	1.9E+002	C I	2.1E+001	C !
URANIUM (SOLUBLE SALTS)		3.00E-003	I								1.1E+002	N	1.1E+001	N	4.1E+000	N	6.1E+003	N	2.3E+002	N
VANADIUM	7440622	7.00E-003	H								2.6E+002	N	2.6E+001	N	9.5E+000	N	1.4E+004	N	5.5E+002	N
VANADIUM PENTOXIDE	1314621	9.00E-003	I								3.3E+002	N	3.3E+001	N	1.2E+001	N	1.8E+004	N	7.0E+002	N
VANADIUM SULFATE	16785812	2.00E-002	H								7.3E+002	N	7.3E+001	N	2.7E+001	N	4.1E+004	N	1.5E+003	N
VINCLOZOLIN	50471448	2.50E-002	I								9.1E+002	N	9.1E+001	N	3.4E+001	N	5.1E+004	N	2.0E+003	N
VINYL ACETATE	108054	1.00E+000	H			5.71E-002	I			y	4.1E+002	N	2.1E+002	N	1.4E+003	N	2.0E+006	N	7.8E+004	N
VINYL CHLORIDE	75014			1.90E+000	H			3.00E-001	H	y	1.9E-002	C	2.1E-002	C	1.7E-003	C	3.0E+000	C	3.4E-001	C
WARFARIN	81812	3.00E-004	I								1.1E+001	N	1.1E+000	N	4.1E-001	N	6.1E+002	N	2.3E+001	N
M-XYLENE	108383	2.00E+000	H							y	1.2E+004	N	7.3E+003	N	2.7E+003	N	4.1E+006	N	1.5E+005	N
O-XYLENE	95476	2.00E+000	H							y	1.2E+004	N	7.3E+003	N	2.7E+003	N	4.1E+006	N	1.5E+005	N
P-XYLENE	106423									y										
XYLENES	1330207	2.00E+000	I							y	1.2E+004	N	7.3E+003	N	2.7E+003	N	4.1E+006	N	1.5E+005	N
ZINC	7440666	3.00E-001	I								1.1E+004	N	1.1E+003	N	4.1E+002	N	6.1E+005	N	2.3E+004	N
ZINC PHOSPHIDE	1314847	3E-004	I								1.1E+001	N	1.1E+000	N	4.1E-001	N	6.1E+002	N	2.3E+001	N
ZINEB	12122677	5E-002	I								1.8E+003	N	1.8E+002	N	6.8E+001	N	1.0E+005	N	3.9E+003	N

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