# 3. LAKE ERIE

## 3.1 BUFFALO RIVER AOC, ERIE COUNTY, NY

The Buffalo River AOC is located in the City of Buffalo in western New York State. The Buffalo River flows west into Lake Erie near the head of the Niagara River. The AOC extends from the mouth of the Buffalo River approximately 6 miles to the east and includes the adjoining land.

### 3.1.1 Hazardous Waste Sites Relevant to the Buffalo River AOC

ATSDR has evaluated the data for six hazardous waste sites in Erie County, NY, and reached conclusions regarding the public health threat posed by these sites. These conclusions, along with information regarding the type and location of the site, and the date and type of assessment document, are summarized in Table 3.1-A.

**Table 3.1-A. Hazardous Waste Sites in Erie County, NY**

| Site Name | Public Health Hazard Category | EPA NPL Status | Site ID | City |
|---|---|---|---|---|
| Abby Street Hickory Wood Subdivision | 2 (1999 HC)<br>2 (2001 HC) | Non NPL | NYSFN0204229 | Buffalo |
| Diarsenol Company | 2 (1994 HA) | Non NPL | NYD981187040 | Buffalo |
| Ernst Steel | 2 (1990 HC) | Non NPL | NYD980508246 | Buffalo |
| Newstead Site | 1 (1989 HV)<br>n.c. (1992 LI) | Non NPL | NYD986883387 | Newstead |
| Pfohl Brothers Landfill | 3,4 (1995 HA) | Final | NYD980507495 | Cheektowaga |
| Wide Beach Development | 4 (1987HA,<br>n.d. SR) | Deleted Post SARA | NYD980652259 | Brant |

1=Urgent Public Health Hazard, 2=Public Health Hazard, 3=Indeterminate Public Health Hazard, 4=No Apparent Public Health Hazard
HA=Public Health Assessment, HC=Health Consultation, HV=Health Advisory, LI=Lead Initiative, SR=Site Review and Update
n.c. = No category reported, n.d. =No date provided

For hazardous waste sites in Erie County, NY that at any time had Public Health Hazard Categories of 1-3, the number of contaminant records in HazDat that exceeded health based-screening values was 563, as shown in Table 3.1-B. Most of the records were for the soil media group; water had the next highest number of records.

The IJC Great Lakes critical pollutants accounted for 118 (21%) of these records, with the majority for the soil media group. The IJC critical pollutants that have been found at Erie County, NY hazardous waste sites, at concentrations exceeding health-based screening values are: PCBs, TCDD, B(a)P, DDT and metabolites, aldrin/dieldrin, lead, mercury, and hexachlorobenzene. Details are provided in Table 3.1-C.

ATSDR provides further evaluation of these data in the Public Health Assessments and other health-related documents listed in Table 3.1-A. The evaluations for the five sites with Public Health Hazard Categories of 1-3 are discussed in the following subsections.

#### 3.1.1.1 Abby Street/Hickory Woods Subdivision

This subdivision is located within the AOC, near a former steel and coke manufacturing property and within a half-mile of the river, which lies to the north and west of the subdivision. The area includes about 80 homes, three vacant lots, and a playground. Most of the houses are built on fill. Information on this site is taken from the 2001 ATSDR health consultation for this site.

**Category of Public Health Hazard:** In 1999, ATSDR concluded that several unfenced vacant lots in the subdivision posed a *Public Health Hazard* (Category 2) for people living next to these lots; the lots were covered with crushed stone over geo-textile mats, apparently due to a concern for elevated B(a)P equivalents in soil. Three residential lots and one undeveloped lot were excavated to remove PAH-contaminated soil, assessed as B(a)P equivalents. Additional monitoring of soil and of sump water in the subdivision was undertaken. In 2001, ATSDR concluded that the levels of arsenic contamination in surface soil at a playground are a public health hazard.

**Contaminants of Concern in Completed Exposure Pathways:** Not explicitly discussed, but completed exposure pathways appeared to be soil ingestion and soil contact in yards, vacant lots, and a playground. The contaminants that exceeded health-based screening values in soil were the IJC critical pollutants PAHs [as B(a)P equivalents] and lead. The IJC critical pollutants aldrin and dieldrin—in single samples—required further investigation. The source of lead was thought to be lead paint, and possibly historical contributions from leaded gasoline, and emissions from industry. Levels of lead and PAHs were comparable to or lower than those of two other Buffalo area neighborhoods. Arsenic levels in soil at the playground were considered high enough to constitute a public health hazard.

**Demographics:** Approximately 80 homes were located in this subdivision.

**Public Health Outcome Data:**

*NYSDOH survey*: NYSDOH conducted a self-reported survey of the residents to investigate potential exposures and health conditions. Among the 201 residents who participated:

- Ten (or 5%) reported thyroid disease (primarily hypothyroid); they had resided in the subdivision for at least 5 years (average 10 years). Six of the affected residents were under age 45. Among the general U.S. population of all ages, the rate of thyroid disease was 1.7%.

- A follow-up Health Consultation (April 2004) reported that the NYSDOH had obtained medical records for half of those individuals reporting a thyroid condition. The NYSDOH found that almost all of the participants in the follow up had a variety of predisposing conditions with regard to the thyroid disease. For this reason, seeking alternative explanations for these diagnoses was not considered warranted.

- The rates and types of cancer reported among the participants did not reveal an unusual pattern of cancer incidence.

*NYSDOH analysis of childhood blood lead levels*: Data from the universal screening of children under the age of six were analyzed:

- Of the 49 children in the subdivision who were screened during 1994-2000, 31 had values less than 5 µg/dL, 12 had values of 5-9.9 µg/dL, and 6 had values greater than or equal to 10 µg/dL. Further analyses revealed a significant correlation between blood lead levels for children in older homes and soil lead levels at their homes; the age of housing was highly predictive of soil lead levels.

**Conclusions:** This site, a residential area with contamination by lead from leaded paint and past industrial activities, and PAHs [as B(a)P equivalents] from combustion including past industrial activities, may contribute slightly to the burden of IJC critical pollutants. Elevated levels of aldrin and dieldrin were found in soil at one location, but these IJC critical pollutants do not appear to have been widespread contaminants at this site. Concentrations of arsenic (not an IJC critical pollutant) in soil at a playground were high enough to be considered a public health hazard.

ATSDR recommended follow-up on the thyroid conditions among Hickory Woods residents because the prevalence was elevated, in comparison with the general population. A subsequent ATSDR Health Consultation (April 2004) conducted with the NYSDOH of medical records showed predisposing factors for the thyroid condition in most of the persons initially surveyed and found to have a thyroid condition. The assessor indicated that this finding suggested that further investigation of the elevated thyroid condition was not warranted.

#### 3.1.1.2 Diarsenol Company (Kingsley Park)

This site is the grounds of the former Diarsenol Company pharmaceutical manufacturing plant, approximately 2.5 miles north of the AOC. The pharmaceutical plant produced an arsenic-based medication from 1930 to 1948, and was reported to have stored waste materials and unused product on open ground beside the facility. The property was purchased by the City of Buffalo in 1968 and was used as a public recreation area (called Kingsley Park) until 1988, when it was closed because of concerns regarding contamination. Information regarding this site is taken from the 1994 ATSDR public health assessment.

**Category of Public Health Hazard:** ATSDR concluded that this site posed a Public Health Hazard (Category 2) prior to 1991 because nearby residents and park users may have been exposed to levels of arsenic, lead, and PAHs that exceed health-based values. In 1991, remediation was performed by excavation and removal of soil to a minimum of 1-foot depth from the site and the bordering yards, and replacement with clean soil, and seeding with grass. ATSDR concluded that present and future exposure to site-related contaminates was unlikely because of the remediation.

**Contaminants of concern in Completed Exposure Pathways:** None. Prior to 1991, residents were exposed to the IJC priority critical pollutants carcinogenic PAHs [including B(a)P] and lead, as well as to arsenic, at levels that could have adverse health effects. Completed exposure pathways were ingestion, skin contact, and possibly inhalation of contaminants in surface soil and ingestion of leafy vegetables grown on contaminated soil. Arsenic was considered site-related. The source of lead, which was higher offsite than onsite, was thought to be lead paint on

older buildings and gasoline. PAHs were found at levels typical of urban soils and were thought to be related to urban air quality and combustion of fossil fuels.

**Demographics:** Kingsley Park is in census tract 33.02 and borders 32.02. The combined total population for these tracts is 9,517, of which 16% was under 10 years of age and 16% was 65 or older.

**Public Health Outcome Data:**

The NYSDOH is conducting a cancer study in the Kingsley Park area:

- The Erie County Health Department conducted a blood lead and urinary arsenic screening program for residents of all ages in the community, but participation was limited.

- The screening blood lead level was 25 µg/dL (previous CDC guideline).

- Only 2 of the 305 samples showed elevated blood leads (one child, born after the park was closed, had 25 µg/dL, and one older person had 29 µg/dL).

- Testing of 304 community residents for urinary arsenic revealed that all had levels below 10 µg/L; the health-based screening value was 50 µg/L.

**Conclusions:** Although this site may have contributed slightly to human exposure and the burden of the IJC critical pollutants lead and PAHs in the past, these pollutants are not considered related to the manufacturing activities that occurred at the site, but rather to leaded paint, combustion of leaded gasoline and fossil fuels, and to urban air quality. The site may also have contributed to arsenic pollution; arsenic was a site-related contaminant. The site has been remediated by removal and replacement of the contaminated soil.

### 3.1.1.3 Ernst Steel Site

This site is located approximately two miles north of the AOC. The western portion of the 10-acre site reportedly contained paint sludge, metal shavings, machine cutting oil, and other waste dumped up until 1980. Access to this area is not restricted. Information regarding this site is taken from the 1990 ATSDR health consultation.

**Category of Public Health Hazard:** ATSDR concluded that this site posed a Public Health Hazard (Category 2) due to the levels of lead and chromium found onsite and the potential for the public to frequent the site.

**Contaminants of Concern in Completed Exposure Pathways:** The IJC critical pollutant leads, and also chromium, were present in soil at concentrations that were anticipated to have adverse health effects through ingestion and inhalation of dust by nearby residents, including children, who may frequently traverse the site or play onsite. The contamination with lead and chromium was considered site-related. Insufficient data were available to determine if offsite

migration through runoff, air dispersion, or contamination of groundwater were occurring. In 1992, additional sampling revealed 11,000 tons of lead contaminated paint waste material.

**Demographics:** Not reported. A residential area was located nearby.

**Public Health Outcome Data:** Not reported.

**Conclusions:** This site may have contributed to the environmental burden of lead, an IJC critical pollutant, and also chromium. Issues for further investigation include the lack of information regarding possible offsite migration or contamination of groundwater by lead and chromium, and the lack of monitoring data for organic contaminants that may be present from the machine cutting oil and other unknown organics that may have been dumped. The site was remediated by removing contaminated soil, constructing buildings, and an asphalt parking lot which reduced the potential for future direct contact exposure.

#### 3.1.1.4 Newstead Site

The Newstead housing site is a 6-acre parcel of land located on Fletcher Road in Newstead, Erie County, NY, several miles northeast of the AOC. It contains a residence and associated play area and barn, plus a fallow field, a garden, and an area that had reportedly been used for disposal of old chemicals and paints from a paint manufacturing firm in Buffalo. In 1985, a site inspection revealed protruding 55 gallon drums and waste material of tar-like and resinous consistency on the surface of the ground. Information regarding this site is taken from the 1992 ATSDR lead initiative summary report and from HazDat.

**Category of Public Health Hazard:** In 1989, ATSDR issued a public health advisory (Category 1, Urgent Public Health Hazard) due to high levels of lead and cadmium in soil and physical hazards. A further assessment in 1992 did not provide a health hazard category, but recommended that further actions await the results of a Remedial Investigation/Feasibility Study.

**Contaminants of Concern in Completed Exposure Pathways:** In the past, when people were living at the site, exposure to soil contaminated with very high concentrations of the IJC critical pollutant lead and also high concentrations of cadmium probably occurred during routine domestic activities (playing, lawn care, and gardening). Although the site has been fenced, there is still a concern for exposure to trespassers. Groundwater was monitored, but results are not mentioned in the discussion of contaminants of concern, and are not on HazDat.

**Demographics:** Two adults and two children under 5 years of age formerly resided on the site. There area is relatively rural, but there are some neighbors.

**Public Health Outcome Data:** The past residents of the site, who had been relocated sometime after 1985 and before 1989, were tested in 1991 for blood lead and cadmium levels and urinary cadmium levels by the NYSDOH. The levels of contaminants were reported to be within the range of the general population.

**Conclusions:** Lead and cadmium contamination of soil has not been remediated, but apparently has not resulted in groundwater contamination. The site is fenced. The location of the site with

regard to streams feeding into the Buffalo River is not available in the materials reviewed for this report, but the site is not near the AOC.

#### 3.1.1.5 Pfohl Brothers Landfill

The Pfohl Brothers Landfill, a 120-acre site, is located in the northeastern portion of Erie County, NY, several miles northeast of the Buffalo River AOC. It is near Ellicott Creek, which drains into the Niagara River rather than the Buffalo River. It was in operation from 1932 to 1971, and accepted both municipal and industrial wastes. The industrial wastes included pine tar pitch, waste paints and thinners, waste cutting oils, phenolic tar, and PCB laden oil and capacitors. Information regarding this site was taken from the 1995 ATSDR public health assessment for this site.

**Category of Public Health Hazard:** ATSDR concluded in 1995 that this site represents *No Apparent Public Health Hazard* (Category 4) because the data do not indicate that exposure to contaminants is high enough to cause adverse effects. Removal and remedial activities have greatly reduced the likelihood of exposure to site-related contamination. ATSDR further concluded that this site is an *Indeterminate Public Health Hazard* (Category 3) for past exposures because the data were not adequate to conduct a groundwater contaminant trend analysis.

**Chemicals of Concern in Completed Exposure Pathways:** None currently. A large number of contaminants, including the IJC critical pollutants carcinogenic PAHs, PCBs, lead, and mercury, exceeded health-based comparison concentrations in one or more of the following media: onsite soil, waste materials, leachate, and surface water, and offsite sediments (Aero Lake). Based on further estimation of exposure doses, ATSDR concluded that none exceeded health guideline doses. Potentially site-related contaminants were not found above background or health-based comparison levels in fish in Aero Lake and Ellicott Creek. Data for groundwater including onsite and offsite monitoring wells and private drinking water wells were not adequate to determine whether contaminants, and particularly PCBs and metals, have migrated offsite and to what extent. Additional more systematic monitoring was to be conducted.

**Demographics:** Demographic profile, from the 2000 U.S. Census, for vulnerable populations living within one mile of this site:

| | |
|---|---|
| Children 6 years and younger | 389 |
| Females aged 15-44 | 942 |
| Adults 65 and older | 1,157 |

**Public Health Outcome Data:**

- NYSDOH surveys conducted in 1990 included the 60 residents of 20 nearby households 35% of which were children age 17 or younger, and a few former area residents and former and current employees of the town of Cheektowaga who may have come into contract with site contaminants. The NYSDOH concluded that the survey did not reveal any unusual patterns of illnesses;

- Blood lead screenings of 20 children living near the site, conducted in 1991 by the NYSDOH, found a maximum blood lead level of 8 µg/dL, which was below the CDC action level of 10 µg/dL;

- NYSDOH conducted initial and follow-up studies of cancer incidence for 1978-1987 in three census tracts that comprise the site and Ellicott Creek areas. Observed rates were significantly greater than expected (based on other areas of NY with similar population densities) for all cancers in women, breast cancer in women, and prostate cancer in men. Most of the excess cancer in women was accounted for by breast cancer (130 versus 105 expected), and the breast cancer excess occurred in the landfill census tract (100.01). Geographic analysis revealed no clustering around the landfill. ATSDR concluded that the occurrence of cancer is probably not likely related to the site.

**Conclusions:** Although this site possibly contributed to human and environmental exposure burdens for the IJC critical pollutants carcinogenic PAHs, PCBs, lead, and mercury in the past, completed exposure pathways do not appear to exist following remediation activities and fencing of the site. Groundwater monitoring was to be continued. Public health outcome did not indicate unusual patterns of illnesses. The occurrence of cancer did not appear to be site-related.

### 3.1.2 TRI Data for the Buffalo River AOC

The TRI onsite chemical releases for Erie County, NY are summarized in Table 3.1-C. Total onsite releases in 2001 were 5,269,495 pounds, the majority of which were released to air, followed by releases to water. Little was released to soil.

Of the total onsite releases, 9,387 pounds (0.2%) were accounted for by IJC critical pollutants. The IJC critical pollutants released onsite were PCDDs and PCDFs (to air), lead and lead compounds (to air and water), and mercury and mercury compounds (to air). The facilities that released these pollutants are listed in Table 3.1-D.

The major releases ($\geq$ 500,000 pounds total onsite) of non-IJC chemicals were of hydrochloric acid aerosols, ammonia, and carbon disulfide (primarily to air). Other non-IJC chemicals released in substantial onsite quantities (300,000-499,999 pounds) were sulfuric acid aerosols, toluene, and hydrogen fluoride (primarily to air).

### 3.1.3 NPDES Data for the Buffalo River AOC

The NPDES permitted discharges for Erie County, NY are summarized in Table 3.1-E. The total average annual permitted discharges in 2004 were 691,036 pounds, the majority of which was nitrogen (as ammonia).

The only IJC critical pollutant was lead, accounting for only 124 pounds. The facility permitted to discharge this pollutant is listed in Table 3.1-F.

### 3.1.4 County Demographics and Health Status Data for the Buffalo River AOC

The demographic profile, from the 2000 U.S. Census, for vulnerable populations living in Erie County, NY is as follows:

| | |
|---|---|
| Children 6 years and younger | 82,897 |
| Females aged 15-44 | 197,414 |
| Adults 65 and older | 151,258 |

According to the 2000 HRSA community health status reports, Erie County health status indicators that compared unfavorably with those of the U.S. and also with the median of the peer counties were as follows:

Infant mortality (per 1,000 births)
- Black infant mortality
- Neonatal infant mortality

Birth measures (as percent)
- None

Death measures (per 100,000 population)
- Breast cancer (female)
- Colon cancer
- Coronary heart disease
- Lung cancer

### 3.1.5 Summary and Conclusions for the Buffalo River AOC, Erie County, NY

#### 3.1.5.1 Hazardous Waste Sites

ATSDR has categorized five sites in Erie County, NY in health hazard categories 1-3 at some time in their assessment history. Based on the documents for these sites reviewed in Section 3.1.1, there is no clear evidence that human exposure to waste-site-related IJC critical pollutants is currently occurring at concentrations or doses that exceed health-based screening values. Most of these sites have been remediated by removal of contaminated soil and waste-containing barrels, or exposure is prevented through the use of institutional controls (fencing, covering contaminated soil). A possible exception is the Abby Street/Hickory Woods Subdivision where the non-IJC pollutant arsenic was present in playground soil at levels considered a public health hazard as of the ATSDR's 2001 health consultation.

In the past, the hazardous waste sites may have contributed to the environmental burden of the IJC critical pollutants, particularly PCBs, B(a)P, lead, and mercury. Lead was a site-related soil contaminant at three sites, but was considered due to leaded paint on older buildings and the historical contribution of leaded gasoline at the other two sites. B(a)P also was considered related to urban air quality rather than to be specifically site-related for two of the three sites at which it exceeded health-based comparison values. It is possible that some of the sites are still releasing pollutants, as discussed under Issues for Follow-Up.

The most common exposure pathways for these contaminants were ingestion and dermal contact with contaminated soil.

**Issues for Follow-Up**

Abby Street/Hickory Woods Subdivision: ATSDR concluded that follow up of the thyroid conditions was needed. The follow up demonstrated predisposing factors in the residents with the thyroid condition rather than site exposures as an issue in the elevated thyroid condition High arsenic levels in playground soil appear to have been a subject for follow up by the NYSDOH, but the health consultation is not clear on this point.

Diarsenol Company (Kingsley Park): The NYSDOH is conducting a cancer study in the Kingsley Park area.

Newstead Site: As of ATSDR's 1992 assessment, this site had high levels of lead and cadmium in soil from disposal of old chemicals and paint from paint manufacturing. However, it has not resulted in groundwater contamination. It had been fenced, but not remediated, and was undergoing a remedial investigation/feasibility study. The site is not near the AOC.

Ernst Steel: Data for organic contaminants that may be present from machine cutting oil that was dumped at this site were not available, and no information regarding potential offsite migration or potential contamination of groundwater by known contaminants (lead and chromium) was available. However, the site has been remediated by removing contaminated soil, constructing buildings, and an asphalt parking lot which reduced the potential for future direct contact exposure.

### 3.1.5.2 TRI Data

Onsite TRI releases in Erie County, NY, totaled 5,269,495 pounds, the majority of which were released to air, followed by releases to water. Considerably less was released to soil.

The IJC critical pollutants accounted for 9,387 pounds or 0.2% of the total onsite releases. The IJC critical pollutants released were PCDDs and PCDFs (to air); lead and lead compounds (to air and water); and mercury and mercury compounds (to air).

The major releases ($\geq$ 500,000 pounds total onsite) of non-IJC chemicals were of hydrochloric acid aerosols, ammonia, and carbon disulfide (primarily to air).

### 3.1.5.3 NPDES Data

The NPDES permitted discharges for Erie County, NY are summarized in Table 3.1-E. The total average annual permitted discharges in 2004 were 691,036 pounds, the majority of which was nitrogen (as ammonia).

The only IJC critical pollutant was lead, accounting for only 124 pounds. The facility permitted to discharge this pollutant is listed in Table 3.1-F.

#### 3.1.5.4 County Demographics and Health Status Indicators

Vulnerable populations totaled 431,569. Several Erie County, NY, health status indicators compared unfavorably with both U.S. indicators and with the median of peer county indicators. These health status indicators included black infant mortality, neonatal infant mortality, and deaths from various cancers (breast, colon, and lung), and coronary heart disease.

#### 3.1.5.5 Beneficial Use Impairments (BUIs)

Of the three health-related BUIs, restrictions on fish and wildlife consumption was the only BUI listed as impaired at this AOC site. Further information is available at the EPA web site (http://www.epa.gov/glnpo/aoc/).

**Table 3.1-B Waste Sites Contaminants that Exceeded Health-Based Screening Values Buffalo River AOC**

| CAS No. | Chemical Name | IJC Tracking Number | Air | Biota | Human Material | Other Media | Soil | Water | Total |
|---|---|---|---|---|---|---|---|---|---|
| 011097-69-1 | AROCLOR 1254 | 1 | | | | | 2 | | 2 |
| 011096-82-5 | AROCLOR 1260 | 1 | | | | | 2 | | 2 |
| 001336-36-3 | POLYCHLORINATED BIPHENYLS | 1 | | | | 1 | 2 | 3 | 6 |
| 001746-01-6 | 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN | 2 | | | | 1 | 1 | | 2 |
| 000050-32-8 | BENZO(A)PYRENE | 4 | | | | | 3 | | 3 |
| HZ1500-50-T | BENZO(A)PYRENE EQUIVALENTS | 4 | | | | 1 | 6 | | 7 |
| HZ1500-02-T | PAHS (CARCINOGENIC) | 4 | | 1 | | 3 | 16 | 2 | 22 |
| 000072-54-8 | DDD, P,P'- | 5 | | | | | 2 | 1 | 3 |
| 000072-55-9 | DDE, P,P'- | 5 | | | | | 2 | | 2 |
| 000050-29-3 | DDT, P,P'- | 5 | | | | | 2 | | 2 |
| 000309-00-2 | ALDRIN | 6 | | | | 1 | 3 | 2 | 6 |
| 000060-57-1 | DIELDRIN | 6 | | 1 | | 1 | 5 | 1 | 8 |
| 007439-92-1 | LEAD | 8 | | 2 | 2 | 2 | 21 | 7 | 34 |
| 007439-97-6 | MERCURY | 9 | | | | 2 | 9 | 3 | 14 |
| 000118-74-1 | HEXACHLOROBENZENE | 11 | | 1 | | | 4 | | 5 |
| | | **Total IJC** | | **5** | **2** | **12** | **80** | **19** | **118** |
| 000071-55-6 | 1,1,1-TRICHLOROETHANE | | | | | | 1 | 1 | 2 |
| 000075-34-3 | 1,1-DICHLOROETHANE | | | | | | 1 | 1 | 2 |
| 000075-35-4 | 1,1-DICHLOROETHENE | | | | | | 1 | 1 | 2 |
| 000120-82-1 | 1,2,4-TRICHLOROBENZENE | | | | | | 1 | 1 | 2 |
| 000096-12-8 | 1,2-DIBROMO-3-CHLOROPROPANE | | | | | | | 1 | 1 |
| 000106-93-4 | 1,2-DIBROMOETHANE | | | | | | | 1 | 1 |
| 000540-59-0 | 1,2-DICHLOROETHYLENE | | | | | 1 | | | 1 |
| 000541-73-1 | 1,3-DICHLOROBENZENE | | | | | | 1 | | 1 |
| 000106-46-7 | 1,4-DICHLOROBENZENE | | | | | | 1 | 1 | 2 |
| 000120-83-2 | 2,4-DICHLOROPHENOL | | | | | | 1 | | 1 |
| 000105-67-9 | 2,4-DIMETHYLPHENOL | | | | | | 3 | 1 | 4 |
| 000051-28-5 | 2,4-DINITROPHENOL | | | | | | 2 | | 2 |
| 000121-14-2 | 2,4-DINITROTOLUENE | | | | | | 2 | | 2 |
| 000606-20-2 | 2,6-DINITROTOLUENE | | | | | | 2 | | 2 |
| 000078-93-3 | 2-BUTANONE | | | | | | 1 | | 1 |
| 000091-57-6 | 2-METHYLNAPHTHALENE | | | | | 1 | 3 | | 4 |
| 000088-74-4 | 2-NITROANILINE | | | | | | 2 | | 2 |
| 000099-09-2 | 3-NITROANILINE | | | | | | 1 | | 1 |
| 000534-52-1 | 4,6-DINITRO-O-CRESOL | | | | | | 1 | | 1 |
| 000083-32-9 | ACENAPHTHENE | | | | | | 2 | | 2 |
| 000208-96-8 | ACENAPHTHYLENE | | | | | | 2 | | 2 |
| 000067-64-1 | ACETONE | | | | | 1 | 1 | 1 | 3 |
| 000098-86-2 | ACETOPHENONE | | | | | | 2 | | 2 |
| 007429-90-5 | ALUMINUM | | | | | 2 | 8 | 3 | 13 |
| 000120-12-7 | ANTHRACENE | | | | | | 2 | | 2 |
| 007440-36-0 | ANTIMONY | | | | | | 3 | 1 | 4 |
| 007440-38-2 | ARSENIC | | | 2 | | 1 | 20 | 5 | 28 |
| 007440-39-3 | BARIUM | | | | | 2 | 12 | 8 | 22 |
| 000100-52-7 | BENZALDEHYDE | | | | | | 2 | | 2 |
| 000071-43-2 | BENZENE | | | | | | 1 | 3 | 4 |
| 000056-55-3 | BENZO(A)ANTHRACENE | | | | | | 2 | | 2 |
| 000205-99-2 | BENZO(B)FLUORANTHENE | | | | | | 2 | | 2 |
| 000191-24-2 | BENZO(GHI)PERYLENE | | | | | | 2 | | 2 |
| 000207-08-9 | BENZO(K)FLUORANTHENE | | | | | | 2 | | 2 |
| 000100-51-6 | BENZYL ALCOHOL | | | | | 1 | | | 1 |
| 007440-41-7 | BERYLLIUM | | | | | | 2 | 2 | 4 |
| 000092-52-4 | BIPHENYL | | | | | | 2 | | 2 |
| 000085-68-7 | BUTYL BENZYL PHTHALATE | | | | | | 2 | 1 | 3 |

| CAS No. | Chemical Name | IJC Tracking Number | Air | Biota | Human Material | Other Media | Soil | Water | Total |
|---|---|---|---|---|---|---|---|---|---|
| 007440-43-9 | CADMIUM | | | | | 2 | 19 | 8 | 29 |
| 007440-70-2 | CALCIUM | | | | | | 2 | | 2 |
| 000105-60-2 | CAPROLACTAM | | | | | | 2 | | 2 |
| 000086-74-8 | CARBAZOLE | | | | | | 2 | | 2 |
| 000075-15-0 | CARBON DISULFIDE | | | | | | 1 | | 1 |
| 000108-90-7 | CHLOROBENZENE | | | | | | 1 | 1 | 2 |
| 000075-00-3 | CHLOROETHANE | | | | | | 1 | 2 | 3 |
| 000067-66-3 | CHLOROFORM | | | | | | 1 | | 1 |
| 007440-47-3 | CHROMIUM | | | | | 1 | 12 | 4 | 17 |
| 000218-01-9 | CHRYSENE | | | | | | 2 | | 2 |
| 005103-71-9 | CIS-CHLORDANE | | | | | | 2 | | 2 |
| 007440-48-4 | COBALT | | | | | 1 | 6 | 2 | 9 |
| 007440-50-8 | COPPER | | | | | 2 | 8 | | 10 |
| 000095-48-7 | CRESOL, ORTHO- | | | | | 1 | 2 | 1 | 4 |
| 000106-44-5 | CRESOL, PARA- | | | | | 1 | 3 | 1 | 5 |
| 000098-82-8 | CUMENE | | | | | | 1 | | 1 |
| 000057-12-5 | CYANIDE | | | | | 1 | 2 | | 3 |
| 000110-82-7 | CYCLOHEXANE | | | | | | 1 | | 1 |
| 000117-81-7 | DI(2-ETHYLHEXYL)PHTHALATE | | | 1 | | | 5 | 6 | 12 |
| 000053-70-3 | DIBENZO(A,H)ANTHRACENE | | | | | | 2 | | 2 |
| 000084-66-2 | DIETHYL PHTHALATE | | | | | | 2 | | 2 |
| 000131-11-3 | DIMETHYL PHTHALATE | | | | | | 1 | | 1 |
| 000084-74-2 | DI-N-BUTYL PHTHALATE | | | | | | 2 | | 2 |
| 000117-84-0 | DI-N-OCTYL PHTHALATE | | | | | | 2 | | 2 |
| 001031-07-8 | ENDOSULFAN SULFATE | | | | | | 2 | | 2 |
| 000959-98-8 | ENDOSULFAN, ALPHA | | | | | | 2 | | 2 |
| 033213-65-9 | ENDOSULFAN, BETA | | | | | | 2 | | 2 |
| 000072-20-8 | ENDRIN | | | | | 1 | 2 | | 3 |
| 007421-93-4 | ENDRIN ALDEHYDE | | | | | | 2 | | 2 |
| 053494-70-5 | ENDRIN KETONE | | | | | | 2 | | 2 |
| 000100-41-4 | ETHYLBENZENE | | | | | 1 | 1 | | 2 |
| 000206-44-0 | FLUORANTHENE | | | | | | 2 | | 2 |
| 000086-73-7 | FLUORENE | | | | | | 2 | | 2 |
| 000076-44-8 | HEPTACHLOR | | | | | 1 | 2 | | 3 |
| 001024-57-3 | HEPTACHLOR EPOXIDE | | | | | 1 | 2 | 1 | 4 |
| 000319-84-6 | HEXACHLOROCYCLOHEXANE, ALPHA- | | | | | 1 | 2 | | 3 |
| 000319-85-7 | HEXACHLOROCYCLOHEXANE, BETA- | | | | | | 2 | 1 | 3 |
| 000319-86-8 | HEXACHLOROCYCLOHEXANE, DELTA- | | | | | | 2 | | 2 |
| 000058-89-9 | HEXACHLOROCYCLOHEXANE, GAMMA- | | | | | 1 | 1 | | 2 |
| HZ1000-01-T | HYDROCARBONS, UNSPECIFIED | | | | | 1 | 2 | | 3 |
| 000193-39-5 | INDENO(1,2,3-CD)PYRENE | | | | | | 2 | | 2 |
| 007439-89-6 | IRON | | | | | | 5 | | 5 |
| 007439-95-4 | MAGNESIUM | | | | | | 3 | | 3 |
| 007439-96-5 | MANGANESE | | | | | 1 | 9 | 7 | 17 |
| HZ0900-01-T | METALS N.O.S. | | | 2 | | | 3 | | 5 |
| 000072-43-5 | METHOXYCHLOR | | | | | 1 | 2 | | 3 |
| 000079-20-9 | METHYL ACETATE | | | | | | 1 | | 1 |
| 000108-10-1 | METHYL ISOBUTYL KETONE | | | | | | 1 | | 1 |
| 000108-87-2 | METHYLCYCLOHEXANE | | | | | | 1 | | 1 |
| 000075-09-2 | METHYLENE CHLORIDE | | | | | 1 | 1 | | 2 |
| 000091-20-3 | NAPHTHALENE | | | | | | 2 | | 2 |
| 007440-02-0 | NICKEL | | | | | 1 | 7 | 2 | 10 |
| 000098-95-3 | NITROBENZENE | | | | | | 1 | | 1 |
| 000086-30-6 | N-NITROSODIPHENYLAMINE | | | | | 1 | 2 | | 3 |
| HZ1500-03-T | PAHS (NON-CARCINOGENIC) | | | | | 2 | 8 | | 10 |
| 000087-86-5 | PENTACHLOROPHENOL | | | | | 1 | | | 1 |

| CAS No. | Chemical Name | IJC Tracking Number | Air | Biota | Human Material | Other Media | Soil | Water | Total |
|---|---|---|---|---|---|---|---|---|---|
| HZ1200-01-T | PESTICIDES N.O.S. | | | | | | 1 | | 1 |
| 000085-01-8 | PHENANTHRENE | | | | | | 2 | | 2 |
| 000108-95-2 | PHENOL | | | | | 1 | 2 | 1 | 4 |
| 130498-29-2 | POLYCYCLIC AROMATIC HYDROCARBONS | | | | | 2 | 6 | | 8 |
| 007440-09-7 | POTASSIUM | | | | | | 2 | | 2 |
| 000129-00-0 | PYRENE | | | | | | 2 | | 2 |
| 007782-49-2 | SELENIUM | | | | | 1 | 5 | | 6 |
| 007440-22-4 | SILVER | | | | | 1 | 6 | | 7 |
| 007440-23-5 | SODIUM | | | | | | 2 | | 2 |
| 025322-20-7 | TETRACHLOROETHANE | | | | | 1 | | 1 | 2 |
| 000127-18-4 | TETRACHLOROETHYLENE | | | | | | 1 | | 1 |
| 007440-28-0 | THALLIUM | | | | | | 2 | | 2 |
| 000108-88-3 | TOLUENE | | | | | 1 | 1 | | 2 |
| 005103-74-2 | TRANS-CHLORDANE | | | | | | 2 | | 2 |
| 000079-01-6 | TRICHLOROETHYLENE | | | | | | | 2 | 2 |
| 000075-69-4 | TRICHLOROFLUOROMETHANE | | | | | | 1 | | 1 |
| 007440-62-2 | VANADIUM | | | | | | 8 | 1 | 9 |
| 000075-01-4 | VINYL CHLORIDE | | | | | | | 1 | 1 |
| 001330-20-7 | XYLENES, TOTAL | | | | | | 1 | | 1 |
| 007440-66-6 | ZINC | | | | | 2 | 10 | 3 | 15 |
| 000132-64-9 | DIBENZOFURAN | | | | | 2 | 9 | 3 | 14 |
| MEDEXP-00-0 | | | 2 | 2 | | 4 | 6 | 4 | 18 |
| | | | 1 | 2 | | 2 | 6 | | 11 |
| | | **Total Non-IJC** | **3** | **9** | **0** | **50** | **328** | **84** | **445** |
| | | **Total** | **3** | **14** | **2** | **62** | **408** | **103** | **563** |

## Table 3.1-C TRI Releases (in pounds, 2001) for the Buffalo River AOC

| Chemical | IJC Tracking Number | Total Air Emissions | Surface Water Discharges | Under-ground Injection | Releases to Land | Total Onsite Releases | Total Offsite Releases | Total On- and Offsite Releases |
|---|---|---|---|---|---|---|---|---|
| POLYCHLORINATED BIPHENYLS | 1 | 0 | 0 | 0 | 0 | 0 | 0.43 | 0.43 |
| DIOXIN AND DIOXIN-LIKE COMPOUNDS | 2 | 0.00059535 | No data | 0 | 0 | 0.000595 | 0 | 0.00059535 |
| *(PCDDs and PCDFs)* | 3 | | | | | | | |
| LEAD | 8 | 758.37 | 0 | 0 | 0 | 758.37 | 1676.6 | 2434.97 |
| LEAD COMPOUNDS | 8 | 3947.3164 | 4311.41 | 0 | 48 | 8306.726 | 48134.46 | 56441.1864 |
| MERCURY | 9 | 0.01 | 0 | 0 | 0 | 0.01 | 0 | 0.01 |
| MERCURY COMPOUNDS | 9 | 322 | 0 | 0 | 0 | 322 | 18 | 340 |
| | **Total IJC** | **5027.696995** | **4311.41** | **0** | **48** | **9387.106** | **49829.49** | **59216.597** |
| 1,1-DICHLORO-1-FLUOROETHANE | | 13756 | No data | 0 | 0 | 13756 | 0 | 13756 |
| 1,2,4-TRIMETHYLBENZENE | | 704 | 1 | 0 | 0 | 705 | 50 | 755 |
| 1,3-BUTADIENE | | 13 | 0 | 0 | 0 | 13 | 0 | 13 |
| ACETONITRILE | | 383 | No data | 0 | 0 | 383 | 0 | 383 |
| AMMONIA | | 707047 | 13158 | 0 | 0 | 720205 | 250 | 720455 |
| ANILINE | | 6247 | 193 | 0 | 0 | 6440 | 0 | 6440 |
| ANTHRACENE | | 2 | No data | 0 | 0 | 2 | 0 | 2 |
| ANTIMONY COMPOUNDS | | 0 | No data | 0 | 0 | 0 | 4556 | 4556 |
| ARSENIC COMPOUNDS | | 585 | 8 | 0 | 0 | 593 | 14000 | 14593 |
| BARIUM COMPOUNDS | | 895 | 74000 | 0 | 0 | 74895 | 19000 | 93895 |
| BENZENE | | 17948 | 751 | 0 | 0 | 18699 | 39 | 18738 |
| BENZO(G,H,I)PERYLENE | | 21.7414289 | 0 | 0 | 0 | 21.74142 | 1.64 | 23.3814289 |
| BROMOMETHANE | | 10898 | No data | 0 | 0 | 10898 | 0 | 10898 |
| BUTYL ACRYLATE | | 34 | No data | 0 | 0 | 34 | 0 | 34 |
| CARBON DISULFIDE | | 671000 | No data | 0 | 0 | 671000 | 1800 | 672800 |
| CERTAIN GLYCOL ETHERS | | 25803 | 0 | 0 | 0 | 25803 | 0 | 25803 |
| CHLORINE | | 252 | No data | 0 | 0 | 252 | 0 | 252 |
| CHROMIUM | | 1277 | 0 | 0 | 0 | 1277 | 313 | 1590 |
| CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION) | | 1086 | 24000 | 0 | 1026 | 26112 | 10300 | 36412 |
| COBALT COMPOUNDS | | 3 | 2 | 0 | 0 | 5 | 110 | 115 |
| COPPER | | 1270 | 3 | 0 | 0 | 1273 | 11604 | 12877 |
| COPPER COMPOUNDS | | 0 | No data | 0 | 0 | 0 | 107 | 107 |
| CREOSOTE | | 83 | No data | 0 | 0 | 83 | 0 | 83 |
| CUMENE | | 15 | 0 | 0 | 0 | 15 | 0 | 15 |
| CYANIDE COMPOUNDS | | 29763 | 777 | 0 | 0 | 30540 | 0 | 30540 |
| CYCLOHEXANE | | 84 | 0 | 0 | 0 | 84 | 0 | 84 |
| DI(2-ETHYLHEXYL) PHTHALATE | | 117 | No data | 0 | 0 | 117 | 0 | 117 |
| DIBUTYL PHTHALATE | | 4 | No data | 0 | 0 | 4 | 0 | 4 |
| DICHLOROMETHANE | | 29255 | No data | 0 | 0 | 29255 | 8700 | 37955 |
| DIISOCYANATES | | 11 | No data | 0 | 0 | 11 | 2 | 13 |
| ETHYLBENZENE | | 1265 | 1 | 0 | 0 | 1266 | 35 | 1301 |
| ETHYLENE | | 1993 | 0 | 0 | 0 | 1993 | 0 | 1993 |
| ETHYLENE GLYCOL | | 1 | 5 | 0 | 0 | 6 | 0 | 6 |
| FORMALDEHYDE | | 1009 | 0 | 0 | 0 | 1009 | 0 | 1009 |
| HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY) | | 2224000 | No data | 0 | 0 | 2224000 | 0 | 2224000 |
| HYDROGEN FLUORIDE | | 170005 | No data | 0 | 0 | 170005 | 0 | 170005 |
| MALEIC ANHYDRIDE | | 23 | 0 | 0 | 0 | 23 | 0 | 23 |
| MANGANESE | | 1401 | 250 | 0 | 0 | 1651 | 3791 | 5442 |
| MANGANESE COMPOUNDS | | 1483 | 32000 | 0 | 2048 | 35531 | 11100 | 46631 |
| METHANOL | | 7990 | 0 | 0 | 0 | 7990 | 0 | 7990 |

| Chemical | IJC Tracking Number | Total Air Emissions | Surface Water Discharges | Under-ground Injection | Releases to Land | Total Onsite Releases | Total Offsite Releases | Total On- and Offsite Releases |
|---|---|---|---|---|---|---|---|---|
| METHYL ETHYL KETONE | | 66492 | 0 | 0 | 0 | 66492 | 0 | 66492 |
| METHYL ISOBUTYL KETONE | | 518 | No data | 0 | 0 | 518 | 0 | 518 |
| METHYL METHACRYLATE | | 111160 | No data | 0 | 0 | 111160 | 250 | 111410 |
| METHYL TERT-BUTYL ETHER | | 6014 | 5 | 0 | 0 | 6019 | 0 | 6019 |
| N,N-DIMETHYLANILINE | | 19 | 11 | 0 | 0 | 30 | 750 | 780 |
| N,N-DIMETHYLFORMAMIDE | | 170 | No data | 0 | 0 | 170 | 0 | 170 |
| NAPHTHALENE | | 7331 | 750 | 0 | 0 | 8081 | 0 | 8081 |
| N-BUTYL ALCOHOL | | 169 | No data | 0 | 0 | 169 | 0 | 169 |
| N-HEXANE | | 15284 | 5 | 0 | 0 | 15289 | 56 | 15345 |
| NICKEL | | 1191 | 0 | 0 | 0 | 1191 | 1987 | 3178 |
| NICKEL COMPOUNDS | | 1163 | 17000 | 0 | 9488 | 27651 | 6634 | 34285 |
| NITRATE COMPOUNDS | | 0 | 27160 | 0 | 0 | 27160 | 1430 | 28590 |
| NITRIC ACID | | 1179 | No data | 0 | 0 | 1179 | 0 | 1179 |
| PERACETIC ACID | | 4000 | 0 | 0 | 0 | 4000 | 0 | 4000 |
| PHENANTHRENE | | 1397 | No data | 0 | 0 | 1397 | 0 | 1397 |
| PHENOL | | 24000 | 1200 | 0 | 0 | 25200 | 0 | 25200 |
| POLYCYCLIC AROMATIC COMPOUNDS | | 1399.279526 | 14.75 | 0 | 0 | 1414.029 | 32.8 | 1446.82952 |
| PROPYLENE | | 587 | No data | 0 | 0 | 587 | 0 | 587 |
| SODIUM NITRITE | | 584 | No data | 0 | 0 | 584 | 6960 | 7544 |
| STYRENE | | 24556 | 5 | 0 | 0 | 24561 | 6850 | 31411 |
| SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY) | | 430393 | 0 | 0 | 0 | 430393 | 0 | 430393 |
| TOLUENE | | 395405 | 2 | 0 | 0 | 395407 | 5232 | 400639 |
| TRICHLOROETHYLENE | | 8400 | No data | 0 | 0 | 8400 | No data | 8400 |
| URETHANE | | 0 | No data | 0 | 0 | 0 | 195 | 195 |
| VANADIUM COMPOUNDS | | 475 | 0 | 0 | 0 | 475 | 39000 | 39475 |
| VINYL ACETATE | | 64 | No data | 0 | 0 | 64 | 0 | 64 |
| XYLENE (MIXED ISOMERS) | | 9679 | 3 | 0 | 0 | 9682 | 139 | 9821 |
| ZINC COMPOUNDS | | 4597 | 12288 | 0 | 0 | 16885 | 400863 | 417748 |
| | **Total Non-IJC** | **5043953.021** | **203592.75** | **0** | **12562** | **5260107.7** | **556137.4** | **5816245.21** |
| | **Total** | **5048980.718** | **207904.16** | **0** | **12610** | **5269494.8** | **605966.9** | **5875461.80** |

**Table 3.1-D TRI Facilities Releasing IJC Critical Pollutants Onsite for the Buffalo River AOC**

| IJC Critical Pollutant | Number of Facilities | Facility Name | TRIF ID | City |
|---|---|---|---|---|
| **Dioxin and dioxin-like compounds (PCDDs and PCDFs)** | | | | |
| **Erie County** | **None** | | | |
| **Lead and lead compounds** | **12** | | | |
| Erie County, NY | 12 | BETHLEHEM STEEL CORP. GALVANIZED PRODS. DIV. | 14218BTHLHGALVA | BLASDELL |
| | | BUFFALO CHINA INC. | 14210BFFLCHAYES | BUFFALO |
| | | DERRICK CORP. | 14225DRRCK590DU | CHEEKTOWAGA |
| | | FEDCO AUTOMOTIVE COMPONENTS CO. | 14207FDCTM57TON | BUFFALO |
| | | FRONTIER HOT DIP GALVANIZING INC. | 14207FRNTR1740E | BUFFALO |
| | | GIBRALTAR STEEL CORP. | 14225GBRLT2555W | BUFFALO |
| | | GMC POWERTRAIN DIV. TONAWANDA NY | 14240CHVRLRIVER | BUFFALO |
| | | ITT STANDARD | 14227TTSTN175ST | CHEEKTOWAGA |
| | | L.D. MCCAULEY INC. | 14127LDMCC3875C | ORCHARD PARK |
| | | POHLMAN FNDY. CO. INC. | 14206PHLMN205BA | BUFFALO |
| | | REPUBLIC TECHS. INTL. L.L.C. | 14218BTHLHBARRO | BLASDELL |
| | | WILLIAMS ADVANCED MATERIALS INC. | 14214WLLMS2978M | BUFFALO |
| **Mercury and mercury compounds** | **1** | | | |
| Erie County, NY | 1 | BETHLEHEM STEEL CORP. LACKAWANNA COKE DIV. | 14218BTHLHPOBOX | LACKAWANNA |

**Table 3.1-E NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, Buffalo River AOC**

| Chemical | IJC Tracking Number | Discharge |
|---|---|---|
| LEAD, TOTAL (AS PB) | 8 | 124.10 |
| | **Total IJC** | **124.10** |
| BENZENE | | 277.40 |
| CHLOROBENZENE | | 474.50 |
| CHLOROFORM | | 270.10 |
| CHROMIUM, HEXAVALENT (AS CR) | | 10.95 |
| CYANIDE, TOTAL (AS CN) | | 7957 |
| DI-N-BUTYL PHTHALATE | | 277.40 |
| IRON, TOTAL (AS FE) | | 38325 |
| METHYLENE CHLORIDE | | 930.75 |
| NITROGEN, AMMONIA TOTAL (AS N) | | 10110.50 |
| NITROGEN, AMMONIA, TOTAL (AS NH3) | | 610280 |
| PHENOLICS, TOTAL RECOVERABLE | | 2263 |
| PHENOLS | | 16571 |
| TETRACHLOROETHYLENE | | 2445.50 |
| TOLUENE | | 277.40 |
| XYLENE | | 277.40 |
| ZINC, TOTAL (AS ZN) | | 164.25 |
| | **Total Non-IJC** | **690912.15** |
| | **Total** | **691036.25** |

**Table 3.1-F NPDES Facilities Permitted to Discharge IJC Critical Pollutants, Buffalo River AOC**

| IJC Critical Pollutant | Number of Facilities | Facility Name | NPDES | City |
|---|---|---|---|---|
| **Lead** | **1** | | | |
| Erie County, NY | 1 | IVACO STEEL PROCESSING (NY)LLC | NY0083623 | TONAWANDA |

## 3.2 PRESQUE ISLE BAY AOC, ERIE COUNTY, PA

The Presque Isle Bay AOC is located in northwest Pennsylvania on the southern shore of Lake Erie. The watershed primarily includes urban and industrial areas within the City of Erie and Millcreek Township. The primary tributaries are Millcreek (including Garrison Run) and Cascade Creek, which account for about two-thirds of the water flowing into the bay (see the AOC map in the appendix).

### 3.2.1 Hazardous Waste Sites Relevant to the Presque Isle Bay AOC

ATSDR has evaluated the data for an industrial site and three hazardous waste sites in Erie County PA, and reached conclusions regarding the public health threat posed by these sites. These conclusions, along with information regarding the type and location of the site, are summarized in Table 3.2-A:

**Table 3.2-A Hazardous Waste Sites in Erie County, PA**

| Site Name | Public Health Hazard Category | EPA NPL Status | Site ID | City |
|---|---|---|---|---|
| Foamex Products Site (Corry Area Middle-High School) | 3 (2001 HC) | Non NPL | PAD005029517 | Corry |
| Hammermill – Scott Run Site | 2 (1998 HC) | Non NPL | PAD981114648 | Harborcreek Township |
| Lord-Shope Landfill | 3 (1989 HA)<br>4 (n.d. SR) | Final | PAD980508931 | Girard Township |
| Millcreek Dump | 3 (1989 HA)<br>2 (1993 SR) | Final | PAD980231690 | Erie |

2 = Public Health Hazard, 3 = Indeterminate Public Health Hazard, 4 = No Apparent Public Health Hazard
HA = Public Health Assessment, HC = Health Consultation, SR = Site Review and Update

For sites in Erie County, PA that at any time had Public Health Hazard Categories of 1-3, the number of contaminant records in HazDat that exceeded health-based screening concentrations was 552, as shown in Table 3.2-B. Most of the records were for the soil and water media groups.

The IJC Great Lakes critical pollutants account for 90 (16%) of these records, with the majority for soil, followed by water. The specific IJC critical pollutants whose concentrations exceeded health-based screening values are: PCBs, DDT, dieldrin, lead, and mercury. Details are provided in Table 3.2-C.

Further evaluation of the data for the sites with Public Health Hazard Categories of 1-3 was conducted by ATSDR in the Public Health Assessment and other health-related documents listed in the table. These evaluations are discussed in the following subsections.

#### 3.2.1.1 Foamex Products Site (Corry Area Middle-High School)

The Foamex Products Site is an active manufacturing facility located in Corry, Erie County, PA. ATSDR was asked to evaluate whether air emissions from this facility present a public health hazard to students of Corry Area Middle-High School, located approximately 2,000 feet west of

the plant, and to nearby residents. Information regarding this site is taken from the 2001 ATSDR health consultation on this site.

**Category of Public Health Hazard:** Because the air sampling data may not be representative of long-term or peak exposure patterns, ATSDR classified the emissions from the plant as an *Indeterminate Public Health Hazard* (Category 3).

**Contaminants of Concern in Completed Exposure Pathways:** The conclusion was that the air sampling and monitoring data, from four consecutive days in April 2000, were not adequate to be representative of long-term or peak exposure patterns. The data indicate completed exposure pathways (inhalation) to methylene chloride for residents near the plant, and possibly for the school students, at time-integrated concentrations below ATSDR's MRLs for intermediate and chronic exposure. In addition, for residents near the plant, peak air concentrations of methylene chloride exceeded ATSDR's acute MRL. Toluene diisocyanate isomers in air were not above detection limits.

**Demographics:** Not reported. The facility is located near a school and residential areas.

**Public Health Outcome Data:** Not reported.

**Conclusions:** The site is not associated with IJC critical pollutants. As the Foamex Products Site is an active manufacturing facility rather than a hazardous waste site, its releases also are taken into account in the TRI section of this document.

#### 3.2.1.2 Hammermill – Scott Run Site

This site is located approximately 10 miles east of the City of Erie, in the Harborcreek Township, Erie County, PA. This 5 acre, heavily wooded site was used by the Hammermill Paper Company for disposal of pulp and paper waste in the 1960s. Wood mulch was stored/piled on the site and various wastes, including drummed waste, were dumped into two dug lagoons. The number of drums was estimated at 50 in 1988, and 27 were observed in 2001. Some were partially buried and in various stages of decay; others may not have been visible due to the thick vegetation or sediment deposition. The site is currently part of a recreational park. Information regarding this site was taken from the 1998 ATSDR health consultation for this site.

**Category of Public Health Hazard:** The site was classified as a Category 2 *Public Health Hazard* for people visiting the site due to physical dangers from drowning (lagoons) and falling (foot bridge). There is a potential risk of exposure to chemicals in the drums, but the drum contents have not been adequately characterized. ATSDR concluded that there is no public health risk from hazardous chemicals migrating from the site in surface water and sediment based on 1988 data, but that the potential for additional and new contamination exists as the drums continue to deteriorate.

**Contaminants of Concern in Completed Exposure Pathways:** Inadequate data. Metals, including the IJC critical pollutant lead and also arsenic, cadmium, and chromium, were found in the contents of the only drum that was sampled. Analysis of soil and sediment did not reveal any chemicals at levels that would be expected to cause adverse health effects. Although the IJC critical pollutant DDT was detected in sediments onsite at the outlet of a lagoon, in a marsh close

to Scott Run, and offsite in Scott Run (but upstream, so not site-related), it was not present at levels high enough to impact health, and no fishing was known to occur in Scott Run or the stream into which it flows, which flows into Lake Erie approximately 10 miles east of the AOC.

**Demographics:** Not reported.

**Public Health Outcome Data:** Not reported.

**Conclusions:** Contaminants from the Hammermill-Scott Run site do not appear to be migrating offsite. The deteriorating barrels may release additional as-yet-unknown chemicals, however, and the monitoring data are old (1988) and incomplete. Because there were reported to be only 50 barrels dumped at the site, the amount of potentially hazardous waste is not large.

#### 3.2.1.3 Lord Shope Landfill

This site is located approximately 17 miles west of the City of Erie, PA. The NPL site of about 30 acres includes the 4-acre landfill and adjacent areas of contaminated soil and surface and groundwater. Lord Corporation wastes were dumped at the landfill from about 1954 to 1979, and consisted primarily of debris, but included rubber scrap, organic and inorganic chemicals, solvents, cooling oils, acids, and caustics. Remedial actions in 1982-1983 included removal of exposed drums, containment and removal of 20,000 gallons of leachate, re-grading and capping of the landfill, construction of an upgradient subsurface groundwater diversion wall, and fencing of the site. Additional remediation, initiated after the 1989 public health assessment, included removal of VOCs from the landfill and surrounding soils through vapor stripping and extraction, removal of VOCs from groundwater by vapor stripping, and discharge of treated groundwater to a tributary of Elk Creek. This phase of remediation is ongoing. Information regarding this site was taken from the 1989 ATSDR public health assessment, HazDat, and the 2003 EPA NPL fact sheet for this site.

**Category of Public Health Hazard:** In 1989, ATSDR concluded that the site posed an *Indeterminate Public Health Hazard* (Category 3) because the characterization of onsite and offsite contamination was incomplete. The available data indicated that long-term oral exposure to lead from private wells and dermal exposure to arsenic in offsite surface water were of public health concern. More recently, an ATSDR site review and update concluded that the site poses *No Apparent Public Health Hazard* (Category 4).

**Contaminants of Concern in Completed Exposure Pathways:** None. In the past, concentrations of the IJC critical pollutant, lead, in offsite residential well water presented a long-term public health concern for ingestion, but it could not be determined whether they were site-related. Concentrations of arsenic in offsite surface water were considered a possible dermal contact threat, but it could not be determined whether the contamination was attributable to the site. Onsite groundwater contained VOCs and metals at levels considered a potential concern for public health, but there was no exposure to this groundwater. There were no monitoring data for surface soil.

**Demographics:** Demographic profile, from the 2000 U.S. Census, for vulnerable populations living within one mile of this site:

| | |
|---|---|
| Children 6 years and younger | 26 |
| Females aged 15-44 | 75 |
| Adults 65 and older | 35 |

**Public Health Outcome Data:** Not reported.

**Conclusions:** This site has been remediated through removal of contaminants and fencing, and remediation continues through air stripping. The vulnerable populations living within 1 mile of this site are relatively small.

### 3.2.1.4 Millcreek Dump

This approximately 85-acre site is 2 miles west of the City of Erie and less than 2 miles from Presque Isle Bay. Originally a wetland, most of the site was filled with foundry sand and other industrial and municipal wastes containing VOCs, SVOCs, PCBs, PAHs, and heavy metals during its use as an unpermitted landfill between 1941 and 1981. Drums of hazardous liquids were removed from the site in 1983, and some fencing was completed, but access to most of the site was unrestricted. Information regarding this site was taken from the 1989 ATSDR public health assessment, the 1993 ATSDR site review and update, and the 2003 EPA NPL fact sheet for this site.

**Category of Public Health Hazard:** Based on the 1989 public health assessment, ATSDR concluded that the site was an *Indeterminate Public Health Hazard* (Category 3) because of potential migration of contaminated groundwater during extended droughts to an upgradient public water supply well field. In the 1993 site review and update, ATSDR concluded that the site is a Public Health Hazard (Category 2) to area residents, workers, and site intruders because of exposure to contaminated soil, sediment, and surface water, airborne dust during riding of recreational vehicles, and contaminated groundwater during flooding of basements. Not all of the contaminated groundwater is site-related.

**Contaminants of Concern in Completed Exposure Pathways:** Not explicitly described in the 1993 assessment, but appeared to be the IJC critical pollutants PCBs and lead, as well as other heavy metals and PAHs, in onsite soil through ingestion of soil and inhalation of entrained dust; VOCs and lead in onsite surface water; PAHs and lead in onsite sediment; and VOCs in groundwater by inhalation and direct contact during flooding of basements. The greatest concern in the earlier (1989) assessment was the potential during drought conditions for groundwater contaminated with the IJC critical pollutant lead as well as VOCs to migrate to the upgradient public water supply well field, which could lead to exposure through ingestion, dermal contact, and inhalation.

**Demographics:** Demographic profile, from the 2000 U.S. Census, for vulnerable populations living within one mile of this site:

| | |
|---|---|
| Children 6 years and younger | 90 |
| Females aged 15-44 | 2,289 |
| Adults 65 and older | 2,055 |

**Public Health Outcome Data:** Not reported.

**Conclusions:** Since the time of the most recent ATSDR assessment (1993 site review and update), the landfill has been capped and a flood retention basin constructed. These measures, and continued groundwater treatment and monitoring, should be eliminating the threat of human exposure to site contaminants.

### 3.2.2 TRI Data for the Presque Isle Bay AOC

The TRI onsite chemical releases for Erie County, PA are summarized in Table 3.2-C. Total onsite releases in 2001 were 3,688,175 pounds, primarily to air. Considerably less was released to land, and very little to surface water.

Only 7,974 pounds (0.2%) of this total was accounted for by IJC critical pollutants. The IJC critical pollutants released were PCDDs and PCDFs (primarily to air), lead and lead compounds (to air and land), and mercury (to air and land). The facilities that released these IJC critical pollutants are listed in Table 3.2-D.

The major onsite releases ($\geq$ 500,000 pounds) of non-IJC chemicals were of dichloromethane, methanol, and hydrochloric acid aerosols (primarily to air). No chemicals were released in the 300,000-499,999 pound range.

### 3.2.3 NPDES Data for the Presque Isle Bay AOC

The NPDES permitted discharges for Erie County, PA are summarized in Table 3.2-E. The total average annual permitted discharges in 2004 were 388,803 pounds, the majority of which was phosphorus and ammonia nitrogen. No IJC critical pollutants were the subject of permitted (quantity average limit) discharge amounts.

### 3.2.4 County Demographics and Health Status Data for the Presque Bay AOC

The demographic profile, from the 2000 U.S. Census, for vulnerable populations living in Erie County, PA is as follows:

| | |
|---|---|
| Children 6 years and younger | 25,115 |
| Females aged 15-44 | 59,958 |
| Adults 65 and older | 40,256 |

According to the 2000 HRSA community health status reports, health status indicators for Erie County, PA, that compared unfavorably with those of the U.S. and also with the median of the peer counties were as follows:

Infant mortality (per 1,000 births)
- infant mortality
- white infant mortality
- black infant mortality
- neonatal infant mortality

Birth measures (as percent)
- unmarried mothers
- no care in first trimester

Death measures (per 100,000 population)
- breast cancer (female)
- coronary heart disease
- stroke

### 3.2.5 Summary and Conclusions for the Presque Isle Bay AOC, Erie County, PA

#### 3.2.5.1 Hazardous Waste Sites

Only four sites in Erie County, PA, have been categorized by ATSDR in health hazard Categories 1-3 at some time in their assessment history. One of these sites was an active manufacturing facility (Foamex Products site) rather than a hazardous waste site, and did not release IJC critical pollutants.

Two of the sites have been remediated and are not expected to be contributing to human or environmental exposure. One of the remediated sites, the Millcreek Dump, may have contributed to human exposure and the environmental burden of the IJC critical pollutants PCBs and lead in the past. The other remediated site (Lord Shope Landfill) was a potential, but not confirmed, source of lead in offsite residential well water in the past.

The fourth site, the Hammermill-Scott Run site, has not been remediated. It was thought to contain approximately 50 deteriorating drums of waste when assessed by ATSDR in 1998. The drum contents had not been adequately characterized, and the only available monitoring data were old (1988). The amount of potential hazardous waste, however, is not large. Demographic data were not available for this site.

Public health outcome data were not reported for any of the four sites.

Presque Isle Bay AOC is the first AOC designated in the Recovery Stage after remediation as reported by EPA (June 2004).

**Issues for Follow-Up**

The Hammermill-Scott Run site has not been remediated and may release wastes from the estimated 50 deteriorating drums on site. The contents of the drums have not been adequately characterized.

#### 3.2.5.2 TRI Data

The TRI total onsite chemical releases for Erie County, PA, in 2001 were 3,688,175 pounds.

Only 0.2% of this total was accounted for by IJC critical pollutants. The IJC critical pollutants released were PCDDs and PCDFs (primarily to air), lead and lead compounds (to air and land), and mercury (to air and land).

The major onsite releases (≥ 500,000 pounds) of non-IJC chemicals were of dichloromethane, methanol, and hydrochloric acid aerosols (primarily to air).

#### 3.2.5.3 NPDES Data

The NPDES permitted discharges for Erie County, PA are summarized in Table 3.2-E. The total average annual permitted discharges in 2004 were 388,803 pounds, the majority of which was phosphorus and ammonia nitrogen. No IJC critical pollutants were the subject of permitted (quantity average limit) discharge amounts.

#### 3.2.5.4 County Demographics and Health Status Indicators

Vulnerable populations in Erie County, PA, totaled 125,329. Several Erie County, PA, health status indicators compared unfavorably with both U.S. indicators and with the median of peer county indicators. These health status indicators included infant mortality measures (total, white, black, and neonatal), birth measures (unmarried mothers, no care in first trimester), and deaths from breast cancer, coronary heart disease, and lung cancer.

#### 3.2.5.5 Beneficial Use Impairments (BUIs)

Of the three health-related BUIs, no BUI was listed as impaired at this AOC site. Further information is available at the EPA web site (http://www.epa.gov/glnpo/aoc/

**Table 3.2-B Waste Site Contaminants that Exceeded Health-Based Screening Values**
**Presque Isle Bay AOC**

| | | | Number of Records | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **CAS No.** | **Chemical Name** | **IJC Tracking Number** | **Air** | **Biota** | **Human Material** | **Other Media** | **Soil** | **Water** | **Total** |
| 011097-69-1 | AROCLOR 1254 | 1 | | | | | 1 | | 1 |
| 011096-82-5 | AROCLOR 1260 | 1 | | | | | 9 | | 9 |
| 001336-36-3 | POLYCHLORINATED BIPHENYLS | 1 | | | | 2 | 3 | | 5 |
| 000050-29-3 | DDT, P,P'- | 5 | | | | | 2 | | 2 |
| 000060-57-1 | DIELDRIN | 6 | | 4 | | | | | 4 |
| 007439-92-1 | LEAD | 8 | | | | 4 | 31 | 24 | 59 |
| 007439-97-6 | MERCURY | 9 | | | | 2 | 7 | 1 | 10 |
| | | **Total IJC** | 0 | 4 | 0 | 8 | 69 | 25 | 90 |
| 000071-55-6 | 1,1,1-TRICHLOROETHANE | | 2 | | | 1 | 12 | 16 | 31 |
| 000107-06-2 | 1,2-DICHLOROETHANE | | | | | | | 10 | 10 |
| 000156-60-5 | 1,2-DICHLOROETHENE, TRANS- | | | | | | 1 | 2 | 3 |
| 000540-59-0 | 1,2-DICHLOROETHYLENE | | | | | | 4 | 16 | 20 |
| 000078-93-3 | 2-BUTANONE | | | | | | 1 | 2 | 3 |
| 007440-36-0 | ANTIMONY | | | | | 1 | 2 | | 3 |
| 007440-38-2 | ARSENIC | | | | | 2 | 31 | 13 | 46 |
| 007440-39-3 | BARIUM | | | | | | 5 | 5 | 10 |
| 000071-43-2 | BENZENE | | 2 | | | | | 2 | 4 |
| 007440-43-9 | CADMIUM | | | | | 3 | 31 | 18 | 52 |
| 000056-23-5 | CARBON TETRACHLORIDE | | | | | | | 1 | 1 |
| 000067-66-3 | CHLOROFORM | | | | | | 8 | 5 | 13 |
| 007440-47-3 | CHROMIUM | | | | | 1 | 29 | 21 | 51 |
| 007440-50-8 | COPPER | | | | | | 2 | 3 | 5 |
| HZ1200-08-T | DDT,DDE,DDD | | | 4 | | | | | 4 |
| 000084-74-2 | DI-N-BUTYL PHTHALATE | | | | | 1 | | | 1 |
| 000100-41-4 | ETHYLBENZENE | | | | | 1 | | | 1 |
| HZ0900-02-T | HEAVY METALS, UNSPECIFIED | | | | | 2 | | | 2 |
| HZ1000-01-T | HYDROCARBONS, UNSPECIFIED | | 4 | | | | | | 4 |
| 007439-89-6 | IRON | | | | | | 1 | | 1 |
| 007439-96-5 | MANGANESE | | | | | | | 2 | 2 |
| HZ0900-01-T | METALS N.O.S. | | | 2 | | | 2 | 4 | 8 |
| 000074-82-8 | METHANE | | 2 | | | 2 | | | 4 |
| 000075-09-2 | METHYLENE CHLORIDE | | 2 | | | | | | 2 |
| 000091-20-3 | NAPHTHALENE | | | | | 1 | | | 1 |
| HZ1200-01-T | PESTICIDES N.O.S. | | | 2 | | | | | 2 |
| 064743-03-9 | PHENOLICS | | | | | 2 | | | 2 |
| 000088-99-3 | PHTHALIC ACID | | | | | 2 | | | 2 |
| 130498-29-2 | POLYCYCLIC AROMATIC HYDROCARBONS | | | | | 2 | 20 | | 22 |
| HZ1900-02-T | SEMIVOLATILE ORGANIC COMPOUNDS N.O.S. | | | 2 | | | 2 | 4 | 8 |
| HZ0300-02-T | SOLVENTS, UNSPECIFIED | | | | | 2 | | | 2 |
| 000108-88-3 | TOLUENE | | 4 | | | 1 | | | 5 |
| 000079-01-6 | TRICHLOROETHYLENE | | | | | 2 | 9 | 13 | 24 |
| 000075-01-4 | VINYL CHLORIDE | | 2 | | | | 5 | 21 | 28 |
| HZ1900-01-T | VOLATILE ORGANIC COMPOUNDS N.O.S. | | 4 | 2 | | | 2 | 8 | 16 |
| 001330-20-7 | XYLENES, TOTAL | | | | | 1 | 1 | 1 | 3 |
| 007440-66-6 | ZINC | | | | | 2 | 3 | 3 | 8 |
| MEDEXP-00-0 | | | 3 | 5 | | | 9 | 11 | 28 |
| | | | 5 | 6 | | 5 | 6 | 8 | 30 |

| | | | Number of Records | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **CAS No.** | **Chemical Name** | **IJC Tracking Number** | **Air** | **Biota** | **Human Material** | **Other Media** | **Soil** | **Water** | **Total** |
| | | **Total Non-IJC** | **30** | **23** | **0** | **34** | **194** | **189** | **462** |
| | | **Total** | **30** | **27** | **0** | **42** | **263** | **214** | **552** |

**Table 3.2-C TRI Releases (in pounds, 2001) for Presque Isle Bay AOC**

| Chemical | IJC Tracking Number | Total Air Emissions | Surface Water Discharges | Under-ground Injection | Releases to Land | Total Onsite Releases | Total Offsite Releases | Total On- and Offsite Releases |
|---|---|---|---|---|---|---|---|---|
| DIOXIN AND DIOXIN-LIKE COMPOUNDS | 2 | 0.0018612 | No data | 0 | 1.90292 | 0.002051 | 0 | 0.0020515 |
| *(PCDDs and PCDFs)* | 3 | | | | | | | |
| LEAD | 8 | 4585.96 | 103 | 0 | 0 | 4688.96 | 11233 | 15921.96 |
| LEAD COMPOUNDS | 8 | 213.6502 | No data | 0 | 3024.8 | 3238.450 | 7951.1 | 11189.5502 |
| MERCURY | 9 | 12 | No data | 0 | 0 | 12 | 0 | 12 |
| MERCURY COMPOUNDS | 9 | 24 | No data | 0 | 11 | 35 | 0 | 35 |
| | **Total IJC** | **4835.612061** | **103** | **0** | **3035.800** | **7974.412** | **19184.1** | **27158.51225** |
| 1,2,4-TRIMETHYLBENZENE | | 2590 | 0 | 0 | 0 | 2590 | 0 | 2590 |
| ACETALDEHYDE | | 39000 | No data | 0 | 9 | 39009 | 0 | 39009 |
| ALUMINUM (FUME OR DUST) | | 500 | No data | 0 | 0 | 500 | 2950 | 3450 |
| ALUMINUM OXIDE (FIBROUS FORMS) | | 0 | No data | 0 | 0 | 0 | 187725 | 187725 |
| AMMONIA | | 64533 | 5 | 0 | 0 | 64538 | 250 | 64788 |
| ANTHRACENE | | 3 | No data | 0 | 0 | 3 | 0 | 3 |
| ANTIMONY COMPOUNDS | | 0 | No data | 0 | 0 | 0 | 500 | 500 |
| ASBESTOS (FRIABLE) | | 250 | No data | 0 | 0 | 250 | 848380 | 848630 |
| BARIUM COMPOUNDS | | 5161 | 250 | 0 | 35005 | 40416 | 28345 | 68761 |
| BENZENE | | 2529 | No data | 0 | 0 | 2529 | 0 | 2529 |
| BENZO(G,H,I)PERYLENE | | 1.0004 | No data | 0 | 0 | 1.0004 | 37.7278 | 38.7282 |
| CATECHOL | | 0 | No data | 0 | 1 | 1 | 0 | 1 |
| CERTAIN GLYCOL ETHERS | | 41044 | No data | 0 | 0 | 41044 | 0 | 41044 |
| CHLORINE | | 1105 | No data | 0 | 0 | 1105 | 0 | 1105 |
| CHLORINE DIOXIDE | | 5905 | No data | 0 | 0 | 5905 | 0 | 5905 |
| CHROMIUM | | 1539 | 5 | 0 | 0 | 1544 | 15492 | 17036 |
| CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION) | | 1005 | 0 | 0 | 0 | 1005 | 157171 | 158176 |
| COPPER | | 8589.6 | 505 | 0 | 772.4 | 9867 | 13325.4 | 23192.4 |
| COPPER COMPOUNDS | | 5470 | 250 | 0 | 3705 | 9425 | 22673 | 32098 |
| CYANIDE COMPOUNDS | | 471 | No data | 0 | 0 | 471 | 0 | 471 |
| DI(2-ETHYLHEXYL) PHTHALATE | | 0 | No data | 0 | 0 | 0 | 17000 | 17000 |
| DICHLOROMETHANE | | 1245087 | No data | 0 | 0 | 1245087 | 0 | 1245087 |
| ETHYLENE GLYCOL | | 4 | No data | 0 | 0 | 4 | 0 | 4 |
| ETHYLENE OXIDE | | 500 | No data | 0 | 0 | 500 | 0 | 500 |
| FORMALDEHYDE | | 5 | No data | 0 | 0 | 5 | 0 | 5 |
| HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY) | | 507164 | No data | 0 | 0 | 507164 | 0 | 507164 |
| HYDROGEN FLUORIDE | | 69250 | 0 | 0 | 0 | 69250 | 0 | 69250 |
| MANGANESE | | 6011 | 250 | 0 | 5 | 6266 | 172466 | 178732 |
| MANGANESE COMPOUNDS | | 150 | No data | 0 | 50000 | 50150 | 28082 | 78232 |
| METHANOL | | 1156000 | No data | 0 | 31000 | 1187000 | 0 | 1187000 |
| METHYL ETHYL KETONE | | 762 | 0 | 0 | 0 | 762 | 0 | 762 |
| MOLYBDENUM TRIOXIDE | | 5 | No data | 0 | 0 | 5 | 500 | 505 |
| NAPHTHALENE | | 874 | No data | 0 | 0 | 874 | 0 | 874 |
| N-BUTYL ALCOHOL | | 5590 | 0 | 0 | 0 | 5590 | 0 | 5590 |
| N-HEXANE | | 2475 | 0 | 0 | 0 | 2475 | 0 | 2475 |
| NICKEL | | 6170 | 260 | 0 | 461 | 6891 | 266100 | 272991 |
| NICKEL COMPOUNDS | | 1000 | 5 | 0 | 0 | 1005 | 19485 | 20490 |
| NITRATE COMPOUNDS | | 0 | 5 | 0 | 0 | 5 | 250 | 255 |
| NITRIC ACID | | 4097 | No data | 0 | 0 | 4097 | 0 | 4097 |
| PHENANTHRENE | | 10 | No data | 0 | 0 | 10 | 0 | 10 |
| POLYCYCLIC AROMATIC COMPOUNDS | | 262.2199 | No data | 0 | 0 | 262.2199 | 254.2716 | 516.4915 |
| SEC-BUTYL ALCOHOL | | 25650 | No data | 0 | 0 | 25650 | 0 | 25650 |

| Chemical | IJC Tracking Number | Total Air Emissions | Surface Water Discharges | Under-ground Injection | Releases to Land | Total Onsite Releases | Total Offsite Releases | Total On- and Offsite Releases |
|---|---|---|---|---|---|---|---|---|
| STYRENE | | 89105 | 0 | 0 | 0 | 89105 | 0 | 89105 |
| SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY) | | 166924 | No data | 0 | 0 | 166924 | 0 | 166924 |
| TETRACHLORO-ETHYLENE | | 51557 | No data | 0 | 0 | 51557 | 0 | 51557 |
| TOLUENE | | 4578 | No data | 0 | 0 | 4578 | 0 | 4578 |
| TOLUENE DIISOCYANATE (MIXED ISOMERS) | | 446 | No data | 0 | 0 | 446 | 0 | 446 |
| VANADIUM COMPOUNDS | | 500 | No data | 0 | 0 | 500 | 63890 | 64390 |
| XYLENE (MIXED ISOMERS) | | 23450 | 0 | 0 | 0 | 23450 | 0 | 23450 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| ZINC (FUME OR DUST) | | 755 | No data | 0 | 0 | 755 | 160000 | 160755 |
| ZINC COMPOUNDS | | 930 | No data | 0 | 8700 | 9630 | 63706 | 73336 |
| | **Total Non-IJC** | **3549006.82** | **1535** | **0** | **129658.4** | **3680200.2** | **2068582.3** | **5748782.62** |
| | **Total** | **3553842.432** | **1638** | **0** | **132694.2** | **3688174.6** | **2087766.5** | **5775941.132** |

**Table 3.2-D TRI Facilities Releasing IJC Critical Pollutants Onsite for the Presque Isle Bay AOC**

| IJC Critical Pollutant | Number of Facilities | Facility Name | TRIF ID | City |
|---|---|---|---|---|
| **Dioxin and dioxin-like compounds *(PCDDs and PCDFs)*** | **2** | | | |
| Erie County, PA | 2 | GE ERIE PLANT GETS | 16531GNRLL2901E | ERIE |
| | | INTERNATIONAL PAPER ERIE MILL | 16533HMMRM1540E | ERIE |
| **Lead and lead compounds** | **20** | | | |
| Erie County, PA | 20 | AMERICAN METER CO. | 16503MRCNM920PA | ERIE |
| | | AMERICAN TINNING & GALVANIZING CO. | 16501MRCNT522WE | ERIE |
| | | BUILDING MATERIALS MFG. CORP. | 16507BLDNG128WB | ERIE |
| | | ELECTRIC MATERIALS CO. | 16428LCTRC50SWA | NORTH EAST |
| | | ENGELHARD CORP. | 16503CLSCT1707G | ERIE |
| | | ERIE BRONZE & ALUMINUM | 16506RBRNZ6300W | ERIE |
| | | ERIE COKE CORP. | 16512RCKCRFOOTO | ERIE |
| | | ERIE FORGE & STEEL INC. | 16502NTNLF1341W | ERIE |
| | | GE ERIE PLANT GETS | 16531GNRLL2901E | ERIE |
| | | GUNITE EMI PLANT | 16501MC 603W1 | ERIE |
| | | INTERNATIONAL PAPER ERIE MILL | 16533HMMRM1540E | ERIE |
| | | KEYSTONE FNDY. DIV. | 16512KYSTN944WE | ERIE |
| | | LAMSON & SESSIONS | 16505PYRMD1422I | ERIE |
| | | LINCOLN FNDY. INC. | 16505LNCLN1600I | ERIE |
| | | LORD CORP. | 16514LRDCR1635W | ERIE |
| | | PENN-UNION CORP. | 16412TLDYN229WA | EDINBORO |
| | | PHB DIE CASTING DIV. | 16415PRKRW7900W | FAIRVIEW |
| | | SNAP TITE INC. AUTOCLAVE ENGINEERS DIV. | 16506SNPTT2930W | ERIE |
| | | SNAP TITE INC. UNION CITY SITE | 16438SNPTT201TI | UNION CITY |
| | | URICK FNDY. | 16501RCKFN15THC | ERIE |
| **Mercury and mercury compounds** | **2** | | | |
| Erie County, PA | 2 | GE ERIE PLANT GETS | 16531GNRLL2901E | ERIE |
| | | INTERNATIONAL PAPER ERIE MILL | 16533HMMRM1540E | ERIE |

**Table 3.2-E NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, Presque Isle Bay AOC**

| Chemical | IJC Tracking Number | Discharge |
|---|---|---|
| | **Total IJC** | **0** |
| CHLOROFORM | | 315.73 |
| COPPER, TOTAL (AS CU) | | 542.03 |
| DICHLORODIBROMOMETHANE | | 104.03 |
| NITROGEN, AMMONIA TOTAL (AS N) | | 174681.70 |
| PHOSPHORUS, TOTAL (AS P) | | 213160 |
| | **Total Non-IJC** | **388803.49** |
| | **Total** | **388803.49** |

## 3.3 ASHTABULA RIVER AOC, ASHTABULA COUNTY, OH

The Ashtabula River, located in northeastern Ohio, flows into Lake Erie's central basin at the city of Ashtabula. Its drainage basin covers an area of 137 square miles and its major tributaries include Fields Brook, Hubbard Run, and Ashtabula Creek. The Ashtabula AOC is defined as the lower two miles of the Ashtabula River, Ashtabula Harbor, and the adjacent Lake Erie near shore.

### 3.3.1 Hazardous Waste Sites Relevant to the Ashtabula River AOC

ATSDR has evaluated the data for five hazardous waste sites in Ashtabula County OH, and reached conclusions regarding the public health threat posed by these sites. These conclusions, along with information regarding the type and location of the site, are summarized in Table 3.3-A.

**Table 3.3-A Hazardous Waste Sites in Ashtabula County, OH**

| Site Name | Public Health Hazard Category | EPA NPL Status | Site ID | City |
|---|---|---|---|---|
| Big D Campground | 3 (1989 HA)<br>4 (n.d. SR) | Final | OHD980611735 | Kingsville |
| Fields Brook | 3 (1986 HA)<br>4 (1996 HA) | Final | OHD980614572 | Ashtabula |
| Laskin/Poplar Oil Co. | 3 (1987 HA)<br>3 (n.d. SR) | Deleted Post SARA | OHD061722211 | Jefferson Township |
| New Lyme Landfill | 3 (1986 HA)<br>4 (n.d. SR) | Final | OHD980794614 | New Lyme |

3 = Indeterminate Public Health Hazard, 4 = No Apparent Public Health Hazard
HA = Public Health Assessment, SR = Site Review and Update
n.d. = No Date Provided

For hazardous waste sites in Ashtabula County, OH that at any time had Public Health Hazard Categories of 1-3, the number of contaminant records in HazDat that exceeded health-based screening concentrations was 294, as summarized in Table 3.3-B. Most of the records were for the soil and water media groups.

The IJC critical pollutants exceeding health-based screening concentrations, primarily in soil, were: PCBs, dioxins (TCDD), B(a)P, dieldrin, lead, mercury, and hexachlorobenzene. The IJC chemicals accounted for 41 (14%) of the total detections above health-based screening values.

Further evaluation of the data for the sites with Public Health Hazard Categories of 1-3 was conducted by ATSDR in the Public Health Assessment and other health-related documents listed in the above table. These evaluations are discussed in the following subsections.

#### 3.3.1.1 Big D Campground

This site includes a former sand and gravel pit, which was used as a landfill for waste products. It was no longer in operation as a landfill, and had been capped at the time of the ATSDR health assessment in 1989. According to the EPA fact sheet, the landfill site had included drums containing halogenated and non-halogenated solvents, caustics, oily wastes, toluene diisocyanate

(TDI), TDI residue contaminated with monochlorobenzene and carbon tetrachloride, and monoethylamine. The soils were contaminated with many of these compounds. Groundwater was contaminated with volatile organic compounds and heavy metals, including barium, chromium, and lead. Information regarding this site is taken from the 1989 ATSDR preliminary health assessment, HazDat, and the 2003 EPA NPL fact sheet for this site.

**Category of Public Health Hazard:** This site was categorized as an *Indeterminate Public Health Hazard* (Category 3) because of the potential threat to human health from exposure to contaminants and the lack of monitoring data. A subsequent ATSDR site review and update categorized the site as posing *No Apparent Public Health Hazard* (Category 4).

**Contaminants of Concern in Completed Exposure Pathways:** No monitoring data were available to ATSDR at the time this health assessment was conducted (1989). No completed exposure pathways were determined. Private wells were within the vicinity of the site, and one well on the campground supplied potable water to campers. Conneaut Creek is about one-half mile from the site. Potential pathways included ingestion and direct contract with contaminated groundwater, surface water, soil, and possible ingestion of bioaccumulated contaminants in the food chain, as well as inhalation of volatilized contaminants or contaminants entrained in air. Since that time, the site has been remediated.

**Demographics:** Demographic profile, from the 2000 U.S. Census, for vulnerable populations living within one mile of this site:

| | |
|---|---|
| Children 6 years and younger | 56 |
| Females aged 15-44 | 119 |
| Adults 65 and older | 82 |

**Public Health Outcome Data:** Not reported.

**Conclusions:** This site may have contributed to the environmental burden of the IJC critical pollutant, lead, as well as other contaminants including VOCs. As reported in the EPA NPL fact sheet, extensive remediation of the site, including onsite incineration of wastes and disposal of the resulting ash in the landfill, capping, vegetating, installation of a runoff treatment system, and installation of a groundwater extraction system, has largely eliminated releases of contaminants from the site.

#### 3.3.1.2 Fields Brook

The Fields Brook site is the six square-mile watershed of Fields Brook, which flows through the City of Ashtabula into Ashtabula River, which in turn discharges into Lake Erie, the source of drinking water for the city of Ashtabula. The brook flows through an industrial area that is one of the largest and most diversified areas of chemical plants in Ohio, and is the principal receiving stream for many industrial discharges. The site extends from within the City of Ashtabula to east of the city. Sediments from Fields Brook were contaminated with PCBs, VOCs, PAHs, heavy metals (including mercury and lead), phthalates, and low-level radionuclides. VOCs and PCBs were detected in fish. The information for this site is taken from the 1996 ATSDR public health assessment, HazDat, and the 2003 EPA NPL fact sheet for this site.

**Category of Public Health Hazard:** In the 1986 public health assessment, ATSDR concluded that this site was an *Indeterminate Public Health Hazard* (Category 3). In the 1996 public health assessment, which specifically dealt with a single industrial site, Reactive Metals Incorporated, located within the Fields Brook site, ATSDR concluded that the Reactive Metals, Inc. site constitutes *No Apparent Public Health Hazard* (Category 4); Reactive Metals Inc. was assessed because it released uranium dusts between 1962 and 1990. Exposure to onsite uranium-contaminated soil is prevented by fencing. There is slight uranium contamination of soil just outside the fence, but levels are too low to present a human health risk from either chemical toxicity or radiological effects.

**Contaminants in Completed Exposure Pathways:** None identified. For the 1986 assessment of the entire Fields Brook site, contaminants of concern for potential completed exposure pathways included the IJC critical pollutant, PCBs, in sediment and fish, and VOCs, and the 1996 assessment states that new data were not provided to alleviate those concerns. Potential onsite exposure pathways included absorption through skin or through ingestion. Further detail was not provided in the available source, the 1996 public health assessment, and ATSDR assumed, in the absence of new data to the contrary, that Fields Brook is still contaminated at levels discussed in the 1986 assessment.

The 1996 health assessment states that for the Reactive Metals, Inc. portion of the site, there are no contaminants in completed exposure pathways at levels that would be expected cause adverse health effects.

The EPA Reported (2006) that that the Reactive Metals Incorporated facility (referred to as RMI Extrusion by USEPA), though located as part of the Fields Brook site, is being addressed through actions by the Department of Energy. The actions are being coordinated through the Ohio Department of Health Bureau of Radiation Protection and state and federal RCRA programs.

The EPA reported (2006) that excavation of brook sediment and floodplain soil was completed in December 2002 with the excavation of 53,094 cubic yards of contaminated sediment and floodplain soil from the Fields Brook site. In 2005 and 2006, small pockets of dense non-aqueous phase liquid were found and the source of the contamination is being investigated. The impacted material will be excavated. Also, the health concerns from exposure to contaminants were primarily from PCBs and hexachlorobenzene.

**Demographics:** Demographic profile, from the 2000 U.S. Census, for vulnerable populations living within one mile of the Fields Brook site:

| | |
|---|---|
| Children 6 years and younger | 1,122 |
| Females aged 15-44 | 2,508 |
| Adults 65 and older | 2,123 |

**Public Health Outcome Data:** The Ohio Department of Public Health completed an epidemiological study of cancers associated with the Fields Brook site in 1988. The final document found no evidence for excess cancer mortalities associated with the Fields Brook site.

**Conclusions:** The six square-mile Fields Brook site, which is the watershed of Fields Brook, located in a highly industrialized area including many chemical plants, contributed to the environmental burden of the critical IJC pollutants, PCBs, mercury, and lead. Remediation activities, described in the EPA NPL fact sheet, have included removal and treatment or containment of PCB-contaminated soil and sediment, and of mining residuals. Low-level radionuclides (primarily radium isotopes) and dense non-aqueous phase liquid have been discovered and are being remediated. Several industrial facilities are potentially recontaminating Fields Brook sediment.

The EPA reported (2006) that they have not yet determined whether the excess contamination found during recent O&M sampling is material that was missed during the cleanup or new material contributed to the brook. However, the Fields Brook site remediation has been completed as reported by EPA (June 2004).

#### 3.3.1.3 Laskin Poplar Oil

The Laskin Poplar Oil company site is a 9-acre site located in Jefferson Township of Ashtabula County, OH. It is a former waste oil storage site, with 37 aboveground, inground, and underground oil storage tanks or pits. The oil was contaminated with PCBs and other hazardous substances. Fluid was removed from the tanks in 1981, but sludge residues in the tanks and pits were a concern. The owners formerly used the oil to heat a greenhouse on the property, and for road oiling. Information regarding this site was taken from the 1987 ATSDR public health assessment, HazDat, and the 2003 EPA NPL fact sheet for this site.

**Category of Public Health Hazard:** Based on its 1989 public health assessment, ATSDR concluded that the site posed an *Indeterminate Public Health Hazard* (Category 3) because of the contaminated sludge remaining in the tanks and pits, which could potentially be released due to fire or some act of nature, and which was not well characterized. In addition, soil and the boiler house where the oil was burned were highly contaminated, and contaminants may have an impact on the local creek. A subsequent ATSDR site review and update also categorized the site as an *Indeterminate Public Health Hazard*.

**Contaminants in Completed Exposure Pathways:** None demonstrated. Contaminants of concern included the IJC critical contaminants PCBs, 2, 3, 7, 8-TCDD, lead, and mercury in soil and sediment. PAHs and VOCs also were of concern in soil, sediments, and groundwater. Potential onsite exposure pathways included soil ingestion, dermal absorption, or inhalation of reentrained dust, contact with sediments and/or surface water, and food chain. Groundwater, although contaminated, was not in use as a source of drinking water, but could flow into nearby Cemetery Creek.

**Demographics:** Demographic profile, from the 2000 U.S. Census, for vulnerable populations living within one mile of this site:

| | |
|---|---|
| Children 6 years and younger | 331 |
| Females aged 15-44 | 714 |
| Adults 65 and older | 553 |

**Public Health Outcome Data:** None.

**Conclusions:** In the past, the Laskin Poplar Oil site probably contributed to the environmental burden of the IJC critical pollutants PCBs, 2,3,7,8-TCDD, lead, and mercury. Based on the EPA NPL Fact Sheet for this site, extensive site remediation has been performed, including removal and/or offsite and onsite incineration of waste oil, sludges, soils, and other materials, lowering of the water table, and capping. It therefore appears unlikely that any completed exposure pathways exist at the present, or that releases from the site are currently occurring.

#### 3.3.1.4 New Lyme Landfill

This 40-acre landfill was in operation from 1969 to 1978, with most of waste coming from industrial and commercial sources. It is located about 20 miles south of the city of Ashtabula, in Ashtabula County, OH. Information regarding this site was taken from the 1987 ATSDR public health assessment, HazDat, and the 2003 EPA NPL fact sheet for this site.

**Category of Public Health Hazard:** On the basis of the 1986 public health assessment, ATSDR concluded that the site was an *Indeterminate Public Health Hazard* (Category 3). The major concern appeared to be possible future exposure if the site were to be developed residentially. ATSDR, based on its subsequent site review and update, then concluded that the site posed *No Apparent Health Hazard* (Category 4).

**Contaminants in Completed Exposure Pathways:** None identified. Contaminants of concern for potential exposure included the IJC critical pollutants: lead in sediment, PCBs in one soil sample, and benzo(a)pyrene in soil. Chrysotile asbestos was found in a few leachate samples. VOCs were found in groundwater and leachate. Potential onsite exposure pathways included groundwater ingestion, direct contact with sediments and leachate or inhalation exposure to leachate, and inhalation, ingestion, and direct contact with soil.

**Demographics:** Demographic profile, from the 2000 U.S. Census, for vulnerable populations living within one mile of this site:

| | |
|---|---|
| Children 6 years and younger | 14 |
| Females aged 15-44 | 24 |
| Adults 65 and older | 10 |

**Public Health Outcome Data:** Not reported.

**Conclusions:** This site may have contributed to the environmental burden of the IJC critical pollutants lead and benzo(a)pyrene, and other chemicals such as VOCs and chrysotile asbestos. The site, however, has been remediated according to the EPA NPL Fact Sheet. Remediation included groundwater and leachate treatment, lowering of the water table to eliminate leachate production, and capping and vegetating. Thus, further releases of contaminants and exposure of human populations are unlikely.

### 3.3.2 TRI Data for Ashtabula River AOC

The TRI onsite chemical releases for Ashtabula County are summarized in Table 3.3-C. Total onsite releases in 2001 were 6,138,371 pounds, primarily to air.

Only 1,970 pounds (0.03%) of this total was accounted for by IJC critical pollutants. The IJC critical pollutants released were PCDDs and PCDFs (primarily to land), lead and lead compounds (to air and land), and mercury and mercury compounds (primarily to air). The facilities that released these IJC critical pollutants are listed in Table 3.3-D.

The major release (5,400,000 pounds) of non-IJC chemicals was of carbonyl sulfide (88% of total onsite releases) to air. No other non-IJC releases occurred of a 300,000 pound magnitude or greater. The next highest releases of non-IJC chemicals (in the range of 150,000-299,999 pounds) were styrene and hydrochloric acid aerosols, also released to air.

### 3.3.3 NPDES Data for the Ashtabula River AOC

The NPDES permitted discharges for Ashtabula County, OH are summarized in Table 3.3-E. The total average annual permitted discharges in 2004 were 187,488 pounds, the majority of which was cyanide, phosphorus, and ammonia nitrogen.

The IJC critical pollutants lead and mercury were permitted to be discharged in relative modest amounts. Facilities permitted to release these pollutants are listed in Table 3.3-F.

### 3.3.4 County Demographics and Health Status Data for the Ashtabula River AOC

The demographic profile, from the 2000 U.S. Census, for vulnerable populations living in Ashtabula County, OH, is as follows:

| | |
|---|---|
| Children 6 years and younger | 9,547 |
| Females aged 15-44 | 20,729 |
| Adults 65 and older | 15,051 |

According to the 2000 HRSA community health status reports, health status indicators for Ashtabula County that compared unfavorably with the U.S. and with the median of the peer counties were as follows:

Infant mortality (per 1,000 births)
- none

Birth measures (as percent)
- unmarried mothers

Death measures (per 100,000 population)
- breast cancer (female)
- colon cancer

### 3.3.5 Summary and Conclusions for the Ashtabula River AOC

#### 3.3.5.1 Hazardous Waste Sites

ATSDR has categorized four sites in Ashtabula County, OH, in health hazard categories 1-3 at some time in their assessment history. Based on these assessments, and on updated information from the 2003 EPA NPL fact sheets for the sites, most of the sites have been remediated and no

longer are releasing contaminants and contributing to public health risk. The Fields Brook site (Section 3.3.1.2), which is a very large site impacted by many industrial releases, was remediated for PCB-contaminated soil and sediment and of mining residuals and under remediation for low-level radionuclides and dense non-aqueous phase liquid. It was contaminated with the IJC critical pollutants PCBs, mercury, and lead. The Fields Brook site has subsequently been remediated as reported by EPA (June 2004).

The EPA reported (2006) that a large mass of dense, non-aqueous phase liquid (DNAPL) is present below the Detrex Corporation facility (see Table 3.3-F). An extraction system is in place to remove DNAPL, but the system will need to operate for a long time since the volume of DNAPL is so large. The extraction system will be expanded to speed the removal of product. In addition, to ensure that there is not subsurface movement of DNAPL south to Fields Brook, Detrex will be installing an interceptor trench between its facility and Fields Brook in late 2006.

The EPA reported (2006) that the dredging of the Ashtabula River is on-going. In addition, excavation work in Fields Brook was completed in 2002, but follow-up work is necessary to address pockets of contamination (found during O&M sampling) in the industrial area of the brook.

The EPA reported (2006) that this project began in September of 2006 and is expected to remove over 600,000 cubic yards of sediment contaminated with PCBs.

#### 3.3.5.2 TRI Data

The TRI onsite chemical releases for Ashtabula County in 2001 were 6,138,371 pounds, primarily to air.

Only 1,970 pounds (0.03%) of this total were accounted for by IJC critical pollutants. The IJC critical pollutants released were PCDDs and PCDFs (primarily to land), lead and lead compounds (to air and land), and mercury and mercury compounds (primarily to air).
The major release (5,400,000 pounds) of non-IJC chemicals was of carbonyl sulfide (88% of total onsite releases) to air. No other non-IJC releases occurred of a 300,000 pound magnitude or greater.

#### 3.3.5.3 NPDES Data

The NPDES permitted discharges for Ashtabula County, OH, are summarized in Table 3.3-E. The total average annual permitted discharges in 2004 were 187,488 pounds, the majority of which was cyanide, phosphorus, and ammonia nitrogen.

The IJC critical pollutants lead and mercury were permitted to be discharged in relative modest amounts. Facilities permitted to release these pollutants are listed in Table 3.3-F.

#### 3.3.5.4 County Demographics and Health Status Indicators

Vulnerable populations in Ashtabula County, OH, totaled 45,327. Only three health status indicators for Ashtabula County compared unfavorably with the U.S. and with the median of the

peer counties: the percentage of unmarried mothers and deaths from breast cancer and colon cancer.

#### 3.3.5.5 Beneficial Use Impairments (BUIs)

Of the three health-related BUIs, restrictions on fish and wildlife consumption was the only BUI listed as impaired at this AOC site. Further information is available at the EPA web site (http://www.epa.gov/glnpo/aoc/

## Table 3.3-B Waste Site Contaminants that Exceeded Health-Based Screening Values Ashtabula River AOC

| | | | Number of Records | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CAS No. | Chemical Name | IJC Tracking Number | Air | Biota | Human Material | Other Media | Soil | Water | Total |
| 011097-69-1 | AROCLOR 1254 | 1 | | | | | 2 | | 2 |
| 001336-36-3 | POLYCHLORINATED BIPHENYLS | 1 | | 1 | 1 | 1 | 6 | | 9 |
| 001746-01-6 | 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN | 2 | | | | 1 | 3 | | 4 |
| 041903-57-5 | TETRACHLORODIBENZO-P-DIOXIN | 2 | | | | | | 1 | 1 |
| 000050-32-8 | BENZO(A)PYRENE | 4 | | | | | 3 | | 3 |
| 000060-57-1 | DIELDRIN | 6 | | | | | 1 | | 1 |
| 007439-92-1 | LEAD | 8 | | | | 2 | 7 | 5 | 14 |
| 007439-97-6 | MERCURY | 9 | | | | 1 | 3 | 1 | 5 |
| 000118-74-1 | HEXACHLOROBENZENE | 11 | | 1 | | | 1 | | 2 |
| | | **Total IJC** | **0** | **2** | **1** | **5** | **26** | **7** | **41** |
| 000071-55-6 | 1,1,1-TRICHLOROETHANE | | | | | | 2 | 1 | 3 |
| 000079-34-5 | 1,1,2,2-TETRACHLOROETHANE | | | 1 | | | 1 | 2 | 4 |
| 000079-00-5 | 1,1,2-TRICHLOROETHANE | | | | | | 1 | 1 | 2 |
| 000075-35-4 | 1,1-DICHLOROETHENE | | | | | | 1 | | 1 |
| 000120-82-1 | 1,2,4-TRICHLOROBENZENE | | | | | | 1 | | 1 |
| 000095-50-1 | 1,2-DICHLOROBENZENE | | | | | | 1 | | 1 |
| 000107-06-2 | 1,2-DICHLOROETHANE | | | | | | | 4 | 4 |
| 000156-60-5 | 1,2-DICHLOROETHENE, TRANS- | | | | | | 1 | 1 | 2 |
| 000540-59-0 | 1,2-DICHLOROETHYLENE | | | | | | | 2 | 2 |
| 000541-73-1 | 1,3-DICHLOROBENZENE | | | | | | 1 | | 1 |
| 000106-46-7 | 1,4-DICHLOROBENZENE | | | | | | 2 | 1 | 3 |
| 000105-67-9 | 2,4-DIMETHYLPHENOL | | | | | | 1 | | 1 |
| 000078-93-3 | 2-BUTANONE | | | | | | 1 | 1 | 2 |
| 000091-57-6 | 2-METHYLNAPHTHALENE | | | | | 1 | | | 1 |
| 000083-32-9 | ACENAPHTHENE | | | | | | 1 | | 1 |
| 000208-96-8 | ACENAPHTHYLENE | | | | | | 1 | | 1 |
| 000067-64-1 | ACETONE | | | | | | 1 | 3 | 4 |
| 000107-02-8 | ACROLEIN | | | | | | | 1 | 1 |
| 007429-90-5 | ALUMINUM | | | | | 1 | | | 1 |
| 000120-12-7 | ANTHRACENE | | | | | | 1 | | 1 |
| 007440-38-2 | ARSENIC | | | | | | 1 | 1 | 2 |
| 001332-21-4 | ASBESTOS | | | | | | | 2 | 2 |
| 007440-39-3 | BARIUM | | | | | | 1 | 3 | 4 |
| 000071-43-2 | BENZENE | | | | | | 1 | 4 | 5 |
| 000056-55-3 | BENZO(A)ANTHRACENE | | | | | | 1 | | 1 |
| 000205-99-2 | BENZO(B)FLUORANTHENE | | | | | | 1 | | 1 |
| 000191-24-2 | BENZO(GHI)PERYLENE | | | | | | 1 | | 1 |
| 000207-08-9 | BENZO(K)FLUORANTHENE | | | | | | 1 | | 1 |
| 000085-68-7 | BUTYL BENZYL PHTHALATE | | | | | | 1 | | 1 |
| 007440-43-9 | CADMIUM | | | | | 1 | 2 | 1 | 4 |
| 012705-33-8 | CH | | | | | | 1 | | 1 |
| 000057-74-9 | CHLORDANE | | | | | | 1 | | 1 |
| 000108-90-7 | CHLOROBENZENE | | | | | | 2 | 5 | 7 |
| 000067-66-3 | CHLOROFORM | | | | | | 1 | 2 | 3 |
| 007440-47-3 | CHROMIUM | | | | | | 3 | 3 | 6 |
| 000218-01-9 | CHRYSENE | | | | | | 1 | | 1 |
| 007440-48-4 | COBALT | | | | | 1 | 1 | | 2 |
| 007440-50-8 | COPPER | | | | | 1 | | | 1 |
| 000095-48-7 | CRESOL, ORTHO- | | | | | | 1 | | 1 |
| 000106-44-5 | CRESOL, PARA- | | | | | | | 1 | 1 |

| | | | Number of Records | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CAS No. | Chemical Name | IJC Tracking Number | Air | Biota | Human Material | Other Media | Soil | Water | Total |
| 000057-12-5 | CYANIDE | | | | | | 1 | 1 | 2 |
| 000117-81-7 | DI(2-ETHYLHEXYL)PHTHALATE | | | | | | 2 | | 2 |
| 000053-70-3 | DIBENZO(A,H)ANTHRACENE | | | | | | 1 | | 1 |
| 000084-66-2 | DIETHYL PHTHALATE | | | | | | 1 | | 1 |
| 000131-11-3 | DIMETHYL PHTHALATE | | | | | | 1 | | 1 |
| 000084-74-2 | DI-N-BUTYL PHTHALATE | | | | | | 1 | 1 | 2 |
| HZ1200-13-T | ENDOSULFAN I/ENDOSULFAN II | | | | | | 1 | | 1 |
| 000100-41-4 | ETHYLBENZENE | | | | | | 2 | 1 | 3 |
| 000206-44-0 | FLUORANTHENE | | | | | | 1 | | 1 |
| 000086-73-7 | FLUORENE | | | | | | 1 | | 1 |
| HZ0900-02-T | HEAVY METALS, UNSPECIFIED | | | | | | 1 | 1 | 2 |
| 000087-68-3 | HEXACHLOROBUTADIENE | | | | | | 1 | | 1 |
| HZ1000-01-T | HYDROCARBONS, UNSPECIFIED | | | | | 1 | 3 | 2 | 6 |
| 000193-39-5 | INDENO(1,2,3-CD)PYRENE | | | | | | 1 | | 1 |
| HZ0900-18-T | INORGANICS, N.O.S. | | | | | | 1 | 2 | 3 |
| 007439-89-6 | IRON | | | | | 1 | | | 1 |
| 000078-59-1 | ISOPHORONE | | | | | 1 | | | 1 |
| 007439-96-5 | MANGANESE | | | | | | 1 | | 1 |
| HZ0900-01-T | METALS N.O.S. | | | | | | 3 | 4 | 7 |
| 000108-10-1 | METHYL ISOBUTYL KETONE | | | | | | | 3 | 3 |
| 000075-09-2 | METHYLENE CHLORIDE | | | | | | 1 | 3 | 4 |
| 000091-20-3 | NAPHTHALENE | | | | | | 1 | 1 | 2 |
| 007440-02-0 | NICKEL | | | | | 1 | | | 1 |
| HZ0600-01-T | OIL/GREASE, UNSPECIFIED | | | | | | | 1 | 1 |
| 000095-47-6 | O-XYLENE | | | | | | 2 | | 2 |
| 000087-86-5 | PENTACHLOROPHENOL | | | | | | | 1 | 1 |
| HZ1200-01-T | PESTICIDES N.O.S. | | | | | | 1 | | 1 |
| 000085-01-8 | PHENANTHRENE | | | | | 1 | 1 | | 2 |
| 000108-95-2 | PHENOL | | | | | | 1 | 2 | 3 |
| 130498-29-2 | POLYCYCLIC AROMATIC HYDROCARBONS | | | | | 1 | 6 | 5 | 12 |
| 000129-00-0 | PYRENE | | | | | | 1 | | 1 |
| 007782-49-2 | SELENIUM | | | | | | 1 | | 1 |
| HZ1900-02-T | SEMIVOLATILE ORGANIC COMPOUNDS N.O.S. | | | | | | 1 | | 1 |
| 007440-22-4 | SILVER | | | | | 1 | | | 1 |
| 000100-42-5 | STYRENE | | | | | | 1 | | 1 |
| 014133-76-7 | TECHNETIUM-99 | | | | | | | 1 | 1 |
| 000127-18-4 | TETRACHLOROETHYLENE | | | 1 | | | 2 | 4 | 7 |
| 007440-28-0 | THALLIUM | | | | | 1 | | | 1 |
| 000108-88-3 | TOLUENE | | | | | | 3 | 4 | 7 |
| HZ2100-18-T | TOTAL ORGANIC CARBON | | | | | | | 1 | 1 |
| HZ1300-02-T | TOTAL PHENOLS | | | | | 1 | | | 1 |
| 025323-89-1 | TRICHLOROETHANE | | | | | | | 2 | 2 |
| 000079-01-6 | TRICHLOROETHYLENE | | | 1 | | | 2 | 7 | 10 |
| 000075-69-4 | TRICHLOROFLUOROMETHANE | | | | | | 1 | | 1 |
| 007440-61-1 | URANIUM | | 1 | | | | 4 | 1 | 6 |
| 011113-93-2 | URANIUM OXIDE | | | | | | 1 | 2 | 3 |
| 007440-62-2 | VANADIUM | | | | | | 1 | | 1 |
| 000075-01-4 | VINYL CHLORIDE | | | | | | 2 | 5 | 7 |
| HZ1900-01-T | VOLATILE ORGANIC COMPOUNDS N.O.S. | | | | | | 8 | 10 | 18 |
| 001330-20-7 | XYLENES, TOTAL | | | | | | | 1 | 1 |
| 007440-66-6 | ZINC | | | | | | 1 | | 1 |
| MEDEXP-00-0 | | | 3 | 4 | | 2 | 5 | 8 | 22 |
| | | | 1 | | | 1 | | 3 | 5 |

| | | | Number of Records | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **CAS No.** | **Chemical Name** | **IJC Tracking Number** | **Air** | **Biota** | **Human Material** | **Other Media** | **Soil** | **Water** | **Total** |
| | | **Total Non-IJC** | **5** | **7** | **0** | **17** | **108** | **116** | **253** |
| | | **Total** | **5** | **9** | **1** | **22** | **134** | **123** | **294** |

**Table 3.3-C TRI Releases (in pounds, 2001) for the Ashtabula River AOC**

| Chemical | IJC Tracking Number | Total Air Emissions | Surface Water Discharges | Under-ground Injection | Releases to Land | Total Onsite Releases | Total Offsite Releases | Total On- and Offsite Releases |
|---|---|---|---|---|---|---|---|---|
| DIOXIN AND DIOXIN-LIKE COMPOUNDS | 2 | 0.00062688 | 0.000583443 | 0 | 0.2855034 | 0.28671372 | 0.037485 | 0.32419872 |
| *(PCDDs and PCDFs)* | 3 | | | | | | | |
| LEAD | 8 | 20.1 | No data | 0 | 304 | 324.1 | 40 | 364.1 |
| LEAD COMPOUNDS | 8 | 78.4 | 40 | 0 | 0 | 118.4 | 6076 | 6194.4 |
| MERCURY | 9 | 1396.57 | 0 | 0 | 0 | 1396.57 | 217 | 1613.57 |
| MERCURY COMPOUNDS | 9 | 130 | 0.5 | 0 | 0 | 130.5 | 22 | 152.5 |
| | **Total IJC** | **1625.07062** | **40.5005834** | **0** | **304.28550** | **1969.85671** | **6355.0374** | **8324.89419** |
| 1,3-DICHLOROPROPYLENE | | 511 | No data | 0 | 0 | 511 | 0 | 511 |
| ALUMINUM (FUME OR DUST) | | 904 | 17 | 0 | 0 | 921 | 574189 | 575110 |
| ALUMINUM OXIDE (FIBROUS FORMS) | | 250 | No data | 0 | 0 | 250 | 31300 | 31550 |
| ANTIMONY COMPOUNDS | | 6 | No data | 0 | 0 | 6 | 7425 | 7431 |
| BARIUM COMPOUNDS | | 2102 | 640 | 0 | 0 | 2742 | 139146 | 141888 |
| CARBON DISULFIDE | | 53400 | No data | 0 | 0 | 53400 | 0 | 53400 |
| CARBONYL SULFIDE | | 5400000 | No data | 0 | 0 | 5400000 | 0 | 5400000 |
| CHLORINE | | 3333 | 0 | 0 | 0 | 3333 | 0 | 3333 |
| CHLOROPICRIN | | 527 | No data | 0 | 0 | 527 | 0 | 527 |
| CHROMIUM | | 10 | 1 | 0 | 0 | 11 | 9 | 20 |
| COBALT | | 5 | No data | 0 | 0 | 5 | 4 | 9 |
| COPPER | | 765 | 1 | 0 | 5 | 771 | 22 | 793 |
| COPPER COMPOUNDS | | 255 | 250 | 0 | 0 | 505 | 750 | 1255 |
| DECABROMODIPHENYL OXIDE | | 0 | No data | 0 | 0 | 0 | 8926 | 8926 |
| EPICHLOROHYDRIN | | 409 | 0 | 0 | 0 | 409 | 0 | 409 |
| ETHYLBENZENE | | 308 | No data | 0 | 0 | 308 | 0 | 308 |
| FORMALDEHYDE | | 241 | No data | 0 | 0 | 241 | 0 | 241 |
| HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY) | | 193550 | 0 | 0 | 0 | 193550 | 0 | 193550 |
| HYDROGEN FLUORIDE | | 35000 | No data | 0 | 0 | 35000 | 0 | 35000 |
| LITHIUM CARBONATE | | 47 | No data | 0 | 0 | 47 | 6458 | 6505 |
| MANGANESE COMPOUNDS | | 1314 | 12799 | 0 | 5 | 14118 | 51739 | 65857 |
| METHANOL | | 5468 | 0 | 0 | 0 | 5468 | 0 | 5468 |
| METHYL ETHYL KETONE | | 2605 | No data | 0 | 0 | 2605 | 0 | 2605 |
| METHYL ISOBUTYL KETONE | | 254 | No data | 0 | 0 | 254 | 0 | 254 |
| N-BUTYL ALCOHOL | | 2250 | No data | 0 | 0 | 2250 | 0 | 2250 |
| NICKEL | | 265 | 1 | 0 | 0 | 266 | 8 | 274 |
| PHENOL | | 1415 | No data | 0 | 0 | 1415 | 0 | 1415 |
| POLYCYCLIC AROMATIC COMPOUNDS | | 4.838 | No data | 0 | 0 | 4.838 | 119.7 | 124.538 |
| STYRENE | | 253981 | 0 | 0 | 0 | 253981 | 228273 | 482254 |
| SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY) | | 111000 | No data | 0 | 0 | 111000 | 0 | 111000 |
| TERT-BUTYL ALCOHOL | | 8405 | 0 | 0 | 0 | 8405 | 0 | 8405 |
| TITANIUM TETRACHLORIDE | | 596 | No data | 0 | 0 | 596 | 0 | 596 |
| TOLUENE | | 21161 | 0 | 0 | 0 | 21161 | 0 | 21161 |
| TRANS-1,3-DICHLOROPROPENE | | 511 | No data | 0 | 0 | 511 | 0 | 511 |
| XYLENE (MIXED ISOMERS) | | 21273 | No data | 0 | 0 | 21273 | 0 | 21273 |
| ZINC COMPOUNDS | | 551 | 5 | 0 | 0 | 556 | 131080 | 131636 |
| | **Total Non-IJC** | **6122676.83** | **13714** | **0** | **10** | **6136400.83** | **1179448.7** | **7315849.53** |
| | **Total** | **6124301.90** | **13754.5005** | **0** | **314.28550** | **6138370.69** | **1185803.7** | **7324174.43** |

**Table 3.3-D TRI Facilities Releasing IJC Critical Pollutants Onsite for the Ashtabula River AOC**

| IJC Critical Pollutant | Number of Facilities | Facility Name | TRIF ID | City |
|---|---|---|---|---|
| **Dioxin and dioxin-like compounds *(PCDDs and PCDFs)*** | **3** | | | |
| Ashtabula County, OH | 3 | ASHTABULA | 44004FRSTN2133L | ASHTABULA |
| | | MILLENNIUM INORGANIC CHEMICALS ASHTABULA PLANT 1 | 44004SCMCH2900M | ASHTABULA |
| | | MILLENNIUM INORGANIC CHEMICALS ASHTABULA PLANT 2 | 44004SCMCH2426M | ASHTABULA |
| **Lead and lead compounds** | **5** | | | |
| Ashtabula County, OH | 5 | ASHTABULA | 44004FRSTN2133L | ASHTABULA |
| | | ELKEM METALS CO. ASHTABULA L.P. | 44004LKMMT2700L | ASHTABULA |
| | | GENERAL ALUMINUM MFG. CO. | 44030GNRLL1043C | CONNEAUT |
| | | PLASTICOLORS INC. | 44004PLSTC2600M | ASHTABULA |
| | | ROCK CREEK ALUMINUM INC. | 44084RCKCR2639E | ROCK CREEK |
| **Mercury and mercury compounds** | **3** | | | |
| Ashtabula County, OH | 3 | ASHTA CHEMICALS INC. | 44004LCPCH3509M | ASHTABULA |
| | | ASHTABULA | 44004FRSTN2133L | ASHTABULA |
| | | MILLENNIUM INORGANIC CHEMICALS ASHTABULA PLANT 2 | 44004SCMCH2426M | ASHTABULA |

**Table 3.3-E NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, Ashtabula River AOC**

| Chemical | IJC Tracking Number | Discharge |
|---|---|---|
| LEAD TOTAL RECOVERABLE | 8 | 106.24 |
| LEAD, TOTAL (AS PB) | 8 | 75.65 |
| MERCURY TOTAL RECOVERABLE | 9 | 0.14 |
| MERCURY, TOTAL LOW LEVEL | 9 | 0.67 |
| | **Total IJC** | **182.70** |
| 1,1,1-TRICHLOROETHANE | | 8.85 |
| 1,1,2,2-TETRACHLOROETHANE | | 3.22 |
| 1,1,2-TRICHLOROETHANE | | 11.27 |
| 1,1-DICHLOROETHANE | | 6.92 |
| 1,1-DICHLOROETHYLENE | | 8.85 |
| 1,2,4-TRICHLOROBENZENE | | 46.68 |
| 1,2-DICHLOROBENZENE | | 7.24 |
| 1,2-DICHLOROETHANE,TOTAL WEIGHT | | 46.68 |
| 1,2-DICHLOROPROPANE | | 46.68 |
| 1,2-TRANS-DICHLOROETHYLENE | | 5.63 |
| 1,3 DICHLOROPROPENE | | 0.80 |
| 1,3-DICHLOROBENZENE | | 17.71 |
| 1,4-DICHLOROBENZENE | | 5.63 |
| 2,4-DIMETHYLPHENOL | | 3.22 |
| 2,4-DINITROPHENOL | | 288.13 |
| 2-NITROPHENOL | | 15.29 |
| 4-NITROPHENOL | | 23.34 |
| ACENAPHTHENE | | 4.83 |
| ACENAPHTHYLENE | | 4.83 |
| ACRYLONITRILE | | 1.61 |
| ANTHRACENE | | 0.08 |
| ANTIMONY, TOTAL RECOVERABLE | | 77.26 |
| ARSENIC, TOTAL RECOVERABLE | | 40.24 |
| BARIUM, TOTAL RECOVERABLE | | 20.76 |
| BENZENE | | 14.49 |
| BENZO(A)ANTHRACENE | | 3.22 |
| BENZO(B)FLUORANTHENE(3,4-BENZO) | | 1.61 |
| BENZO(K)FLUORANTHENE | | 4.83 |
| BIS (2-ETHYLHEXYL) PHTHALATE | | 57.14 |
| CADMIUM TOTAL RECOVERABLE | | 36.22 |
| CADMIUM, TOTAL (AS CD) | | 33 |
| CARBON TETRACHLORIDE | | 12.07 |
| CHLORINE, TOTAL RESIDUAL | | 199.11 |
| CHLOROBENZENE | | 17.71 |
| CHLOROETHANE, TOTAL WEIGHT | | 25.75 |
| CHLOROFORM | | 32.19 |
| CHROMIUM TOTAL RECOVERABLE | | 5251.89 |
| CHROMIUM, TOTAL (AS CR) | | 218.11 |
| CHRYSENE | | 2.41 |
| COBALT, TOTAL RECOVERABLE | | 48.29 |
| COPPER TOTAL RECOVERABLE | | 291.47 |
| COPPER, TOTAL (AS CU) | | 263.98 |
| CYANIDE, FREE-WATER PLUS WASTEWATERS | | 67.61 |

| Chemical | IJC Tracking Number | Discharge |
|---|---|---|
| CYANIDE, TOTAL (AS CN) | | 67652.78 |
| DIETHYL PHTHALATE | | 10.46 |
| DIMETHYL PHTHALATE | | 4.83 |
| DI-N-BUTYL PHTHALATE | | 4.83 |
| ETHYLBENZENE | | 37.02 |
| FLUORANTHENE | | 0.48 |
| FLUORENE | | 4.83 |
| HEXACHLOROBUTADIENE | | 0.16 |
| HEXACHLOROETHANE | | 4.02 |
| IRON, SUSPENDED | | 45.07 |
| IRON, TOTAL (AS FE) | | 90.95 |
| MANGANESE, SUSPENDED | | 45.07 |
| MANGANESE, TOTAL (AS MN) | | 1620.11 |
| METHYL CHLORIDE | | 27.04 |
| METHYLENE CHLORIDE | | 14.16 |
| NAPHTHALENE | | 4.83 |
| NICKEL TOTAL RECOVERABLE | | 56.34 |
| NICKEL, TOTAL (AS NI) | | 303.42 |
| NITROBENZENE | | 220.52 |
| NITROGEN, AMMONIA TOTAL (AS N) | | 51667.81 |
| PHENANTHRENE | | 4.83 |
| PHENOL, SINGLE COMPOUND | | 4.83 |
| PHENOLICS, TOTAL RECOVERABLE | | 40.24 |
| PHOSPHORUS, TOTAL (AS P) | | 57335.73 |
| PYRENE | | 4.83 |
| SELENIUM, TOTAL RECOVERABLE | | 153.72 |
| SILVER TOTAL RECOVERABLE | | 18.27 |
| SILVER, TOTAL (AS AG) | | 30.58 |
| TETRACHLOROETHYLENE | | 14.97 |
| TIN, TOTAL (AS SN) | | 48.29 |
| TOLUENE | | 7.24 |
| TRICHLOROETHYLENE | | 10.95 |
| VANADIUM, TOTAL RECOVERABLE | | 24.14 |
| VINYL CHLORIDE | | 18.99 |
| ZINC TOTAL RECOVERABLE | | 280.08 |
| ZINC, TOTAL (AS ZN) | | 216.50 |
| | **Total Non-IJC** | **187305.77** |
| | **Total** | **187488.47** |

**Table 3.3-F NPDES Facilities Permitted to Discharge IJC Critical Pollutants Ashtabula River AOC**

| IJC Critical Pollutant | Number of Facilities | Facility Name | NPDES | City |
|---|---|---|---|---|
| **Lead** | **2** | | | |
| Ashtabula County, OH | 2 | ESAB WELDING PRODUCTS, INC. | OH0063789 | ASHTABULA |
| | | RESERVE ENVIRONMENTAL SERV | OH0098540 | ASHTABULA |
| **Mercury** | **5** | | | |
| Ashtabula County, OH | 5 | ASHTA CHEMICALS, INC. | OH0000752 | ASHTABULA |
| | | CITY OF ASHTABULA | OH0023914 | ASHTABULA |
| | | CITY OF GENEVA | OH0020109 | GENEVA |
| | | DETREX CORP. | OH0001872 | ASHTABULA |
| | | RESERVE ENVIRONMENTAL SERV | OH0098540 | ASHTABULA |

## 3.4 CUYAHOGA RIVER AOC, CUYAHOGA AND SUMMIT COUNTIES, OH

The Cuyahoga River AOC includes the lower 45 miles of the river from the Ohio Edison Dam to the mouth of the river where it drains into Lake Erie at Cleveland. It includes approximately 10 miles of Lake Erie shoreline.

### 3.4.1 Hazardous Waste Sites Relevant to the Cuyahoga River AOC

ATSDR has evaluated the data for one site in Cuyahoga County and two sites in Summit County and reached conclusions regarding the public health threat posed by the site. These conclusions, along with information regarding the type and location of the site, are summarized in Table 3.4-A.

**Table 3.4-A Hazardous Waste Sites in Cuyahoga and Summit Counties, OH**

| Site Name, County | Public Health Hazard Category (ref) | EPA NPL Status | Site ID | City |
|---|---|---|---|---|
| Cady Road, Cuyahoga | 4 (n.d. HC)<br>1 (2002 HC) | Non NPL | OHD980614572 | North Royalton, |
| Bolin Oil, Summit | 5 (1999 HC) | Non NPL | OH0000004895 | Hudson, |
| Sam Winer Motors, Summit | 5 (2002 HC) | Non NPL | OHD987054376 | Akron |

1 = Urgent Public Health Hazard, 4 = No Apparent Public Health Hazard, 5 = No Public Health Hazard
HC = Health Consultation

For hazardous waste sites in Cuyahoga and Summit Counties, OH that at any time had Public Health Hazard Categories of 1-3 (one site - Cady Road, Cuyahoga County), the number of contaminant records in HazDat that exceeded health based-screening values was 144, as shown in Table 3.4-B. Most of the records were for the air media group; water had the next highest number of records.

The IJC Great Lakes critical pollutants accounted for only one of these records, for the water media group. The IJC critical pollutant was lead. Details are provided in Table 3.4-C.

Further evaluation of the data for the Cady Road site was conducted by ATSDR in the health consultation documents listed in Table 3.4-A. These evaluations are discussed in the following subsection.

#### 3.4.1.1 Cady Road, Cuyahoga County, OH

This site is a residential neighborhood with 25 houses that use private wells as their drinking and household water source. The residents complained of gases and odors in the water, oily appearance and taste, explosions at the wellheads and gas bubbling up through the ground. Between 1954 and 1958, oil and gas wells were drilled about 3,000 feet deep at varying elevations along Cady Road. As of the 2002 health consultation, there were approximately 13 oil and gas production wells and one former saltwater injection well about ¼ - ½ miles from the nearest private water well. Many of these wells have a history of violations regarding maintenance and accidents. It is unclear whether the contamination of the water wells is due to the nearby oil and gas extraction wells and saltwater injection well, or to a fault line that has

caused a major fracture in the shale that underlies the aquifer used for drinking water and may allow the migration of underlying oil and gas to the upper water-bearing zones. The information regarding this site is taken from the 2002 ATSDR health consultation (public comment release) and HazDat.

**Category of Public Health Hazard:** An earlier health consultation had classified the site as *No Apparent Public Health Hazard* (Category 4). In the 2002 health consultation and documentation on HazDat (2003), ATSDR concluded that the well water presents an *Urgent Public Health Hazard* (Category 1) due to the explosive hazard of combustible gases.

**Contaminants of Concern in Completed Exposure Pathways:** No IJC critical pollutants were found in completed exposure pathways at exposure levels that were considered harmful. The dissolved gases found in the well water (e.g., methane, sulfides) were consistent with oil and gas deposits. The urgent public health hazard is due to outgasing of combustible VOCs, including methane, from the private well water such that concentrations near two wellheads were at explosive levels, and levels in two basements were near the explosive level. In addition, hydrogen sulfide in the private well water presents a public health hazard because the resulting indoor air concentrations could cause adverse health effects from inhalation exposure. Ingestion of sodium at the levels found in the well water may be harmful to residents with high blood pressure or who are on low sodium diets.

**Demographics:** Demographic profile, from the 1990 U.S. Census, for vulnerable populations living within one mile of this site:

| | |
|---|---|
| Children 6 years and younger | 128 |
| Females aged 15-44 | 334 |
| Adults 65 and older | 192 |

This distribution, however, included people who are not exposed because they do not use private water wells as their drinking water and household water source. Only the residents in the 25 houses on the west half of Cady Road are affected.

**Public Health Outcome Data:** None. Residents have complained of a number of health concerns, however, including lightheadedness, blacking out, shortness of breath, fatigue, and headaches. These complaints would be consistent with high-level exposure to the chemicals in completed exposure pathways.

**Conclusions:** Whether the contaminants in the aquifer used for drinking water wells on Cady Road resulted from human activities (oil and natural gas extraction) or from geological activity is unclear, but the contamination with VOCs such as methane poses an explosive health hazard and with hydrogen sulfide poses a health hazard due to inhalation. No IJC critical pollutants are implicated. The suggested solution to this problem is switching the residents to municipal water.

### 3.4.2 TRI Data for the Cuyahoga AOC

The TRI onsite chemical releases for Cuyahoga and Summit Counties (combined) are summarized in Table 3.4-C. Total onsite releases in 2001 were 5,037,090 pounds, the majority of which were released to air, followed by releases to soil. Very little was released to surface

water. Cuyahoga County accounted for 68% and Summit County accounted for 32% of the total onsite releases.

Only 75,042 pounds (1.5%) of the total onsite releases were IJC critical pollutants. The IJC critical pollutants released were PCDDs and PCDFs (primarily to air), lead and lead compounds (primarily to air and land), and mercury and mercury compounds (primarily to air). The facilities that released these pollutants are listed in Table 3.4-D.

The major releases (≥ 500,000 pounds) of non-IJC chemicals were of zinc compounds (primarily to land) and 1-chloro-1,1-difluoroethane (primarily to air). Other non-IJC chemicals released onsite in substantial onsite quantities (300,000-499,999 pounds) were hydrochloric acid, toluene, methyl ethyl ketone, sulfuric acid, and trichloroethylene (primarily to air), and manganese compounds (primarily to land)

### 3.4.3 NPDES Data for the Cuyahoga River AOC

The NPDES permitted discharges for Cuyahoga and Summit Counties, OH are summarized in Table 3.4-E. The total average annual permitted discharges in 2004 were 4,924,341 pounds, the majority of which was ammonia nitrogen and phosphorous. Nickel also was permitted to be discharged in substantial amounts (approximately 189,000 pounds).

The IJC critical pollutants lead (approximately 16,000 pounds) and mercury (only 1.58 pounds) was permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.4-F.

### 3.4.4 County Demographics and Health Status Data for the Cuyahoga River AOC

The demographic profile, from the 2000 U.S. Census, for vulnerable populations living in Cuyahoga and Summit Counties, OH, is as shown in Table 3.4-G:

**Table 3.4-G County Demographic Profiles for the Cuyahoga River AOC**

| Vulnerable population | Cuyahoga County | Summit County | Total for AOC |
|---|---|---|---|
| Children 6 years and younger | 129,863 | 51,062 | 180,925 |
| Females aged 15-44 | 296,262 | 115,325 | 411,587 |
| Adults 65 years and older | 217,161 | 76,572 | 293,733 |

According to the 2000 HRSA community health status reports, health status indicators that compared unfavorably with the U.S. indicators and also with the median of the peer counties for the two counties relevant to the Cuyahoga River AOC were as follows (indicators that were above the upper limit of the peer county range are bolded):

Cuyahoga County:
Infant mortality (per 1,000 births)

- **infant mortality**
- **white infant mortality**
- black infant mortality
- **neonatal infant mortality**

- post-neonatal infant mortality

Birth measures (as percent)

- low birth weight
- very low birth weight
- premature births
- unmarried mothers

Death measures (per 100,000 population)

- breast cancer (female)
- colon cancer
- coronary heart disease
- lung cancer

Summit County:

Birth measures (as percent)

- premature births

Death measures (per 100,000 population)

- lung cancer

### 3.4.5 Summary and Conclusions for the Cuyahoga River AOC

#### 3.4.5.1 Hazardous Waste Sites

Only one hazardous waste site in Cuyahoga and Summit Counties has ever been categorized by ATSDR with a public health hazard category in the range of 1-3. The Cady Road site in Cuyahoga County has well water contaminated with dissolved gases consistent with oil and gas deposits, which present an explosive hazard (methane) and an inhalation hazard (hydrogen sulfide). The residents of this area are to be switched to municipal water. No IJC critical pollutants are associated with the site.

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#### 3.4.5.2 TRI Data

The TRI onsite chemical releases for Cuyahoga and Summit Counties (combined) in 2001 were 5,037,090 pounds, the majority of which were released to air, followed by releases to soil. Cuyahoga County accounted for 68% and Summit County accounted for 32% of the total onsite releases.

Only 75,042 pounds (1.5%) of the total onsite releases were IJC critical pollutants. The IJC critical pollutants released were PCDDs and PCDFs (primarily to air), lead and lead compounds (primarily to air and land), and mercury and mercury compounds (primarily to air). The facilities that released these pollutants are listed in Table 3.4-D.

The major releases ($\geq$ 500,000 pounds) of non-IJC chemicals were of zinc compounds (primarily to land) and 1-chloro-1,1-difluoroethane (primarily to air). Other non-IJC chemicals released in substantial onsite quantities (300,000-499,999 pounds) were, hydrochloric acid, toluene, methyl ethyl ketone, sulfuric acid, and trichloroethylene (primarily to air), and manganese compounds (primarily to land).

### 3.4.5.3 NPDES Data

The NPDES permitted discharges for Cuyahoga and Summit Counties, OH are summarized in Table 3.4-E. The total average annual permitted discharges in 2004 were 4,924,341 pounds, the majority of which was ammonia nitrogen and phosphorous. Nickel also was permitted to be discharged in substantial amounts (approximately 189,000 pounds).

The IJC critical pollutants lead (approximately 16,000 pounds) and mercury (only 1.58 pounds) was permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.4-F.

### 3.4.5.4 County Demographics and Health Status Indicators

Vulnerable populations in Cuyahoga County and Summit County OH totaled 643,286 and 242,959, respectively. Many health status indicators for Cuyahoga County compared unfavorably with the U.S. and with the median of the peer counties, and three infant mortality indicators were above the upper limit of the peer county range. In contrast, only two health status indicators for Summit County compared unfavorably with the U.S. and with the median of the peer counties. None exceeded the upper limit of the peer county range.

Health concerns about the Cuyahoga River generally involve issues of bacterial contamination of the water, particularly downstream in the Cuyahoga River Valley National Park. Recreational water contact for this area must be restricted due to the bacterial levels as reported by EPA (June 2004).

### 3.4.5.5 Beneficial Use Impairments (BUIs)

Of the three health-related BUIs, restrictions on fish and wildlife consumption and beach closings were the two BUIs listed as impaired at this AOC site. Further information is available at the EPA web site (http://www.epa.gov/glnpo/aoc/).

**Table 3.4-B Waste Site Contaminants that Exceeded Health-Based Screening Values**
**Cuyahoga River AOC**

| | | | Number of Records | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **CAS No.** | **Chemical Name** | **IJC Tracking Number** | **Air** | **Biota** | **Human Material** | **Other Media** | **Soil** | **Water** | **Total** |
| 007439-92-1 | LEAD | 8 | | | | | | 1 | 1 |
| | | **Total IJC** | **0** | **0** | **0** | **0** | **0** | **1** | **1** |
| 000071-55-6 | 1,1,1-TRICHLOROETHANE | | 2 | | | | | | 2 |
| 000076-13-1 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE | | 2 | | | | | | 2 |
| 000095-63-6 | 1,2,4-TRIMETHYLBENZENE | | 2 | | | 1 | | | 3 |
| 000108-67-8 | 1,3,5-TRIMETHYLBENZENE | | 2 | | | 1 | | | 3 |
| 000071-36-3 | 1-BUTANOL | | 2 | | | | | | 2 |
| 000078-93-3 | 2-BUTANONE | | 4 | | | | | | 4 |
| 000591-78-6 | 2-HEXANONE | | 2 | | | | | | 2 |
| 000075-65-0 | 2-METHYL-2-PROPANOL | | 2 | | | | | | 2 |
| 000107-87-9 | 2-PENTANONE | | 2 | | | | | | 2 |
| 000096-22-0 | 3-PENTANONE | | 2 | | | | | | 2 |
| 000622-96-8 | 4-ETHYLTOLUENE | | 1 | | | | | | 1 |
| 000067-64-1 | ACETONE | | 4 | | | | | 1 | 5 |
| 007429-90-5 | ALUMINUM | | | | | | | 1 | 1 |
| HZ0800-02-T | BACTERIA/VIRUSES, UNSPECIFIED | | | | | | | 1 | 1 |
| 007440-39-3 | BARIUM | | | | | | | 1 | 1 |
| 000071-43-2 | BENZENE | | 4 | | | 1 | | | 5 |
| 024959-67-9 | BROMIDE | | | | | | | 1 | 1 |
| 000106-97-8 | BUTANE | | 1 | | | 1 | | | 2 |
| 000123-72-8 | BUTYRALDEHYDE | | 2 | | | | | | 2 |
| 007440-70-2 | CALCIUM | | | | | | | 1 | 1 |
| 000075-15-0 | CARBON DISULFIDE | | 2 | | | | | | 2 |
| 000056-23-5 | CARBON TETRACHLORIDE | | 1 | | | | | | 1 |
| 016887-00-6 | CHLORIDE | | | | | | | 1 | 1 |
| HZ2100-12-T | CHLORIDES | | | | | | | 1 | 1 |
| 000067-66-3 | CHLOROFORM | | 1 | | | | | | 1 |
| 000074-87-3 | CHLOROMETHANE | | 4 | | | | | | 4 |
| 007440-47-3 | CHROMIUM | | | | | | | 1 | 1 |
| 007440-50-8 | COPPER | | | | | | | 1 | 1 |
| 000124-18-5 | DECANE | | 1 | | | | | | 1 |
| 000075-43-4 | DICHLOROFLUOROMETHANE | | 2 | | | | | | 2 |
| 000074-84-0 | ETHANE | | 1 | | | 1 | | 1 | 3 |
| 000100-41-4 | ETHYLBENZENE | | 3 | | | 1 | | | 4 |
| 000074-85-1 | ETHYLENE | | | | | | | 1 | 1 |
| HZ0800-10-T | FECAL COLIFORM BACTERIA | | | | | | | 2 | 2 |
| 016984-48-8 | FLUORIDE ION | | | | | | | 1 | 1 |
| 000111-71-7 | HEPTANAL | | 1 | | | | | | 1 |
| 000110-54-3 | HEXANE, N- | | 2 | | | 1 | | | 3 |
| 007783-06-4 | HYDROGEN SULFIDE | | 1 | | | 1 | | 1 | 3 |
| HZ0900-18-T | INORGANICS, N.O.S. | | | | | | | 1 | 1 |
| 007439-89-6 | IRON | | | | | | | 1 | 1 |
| 000067-63-0 | ISOPROPANOL | | 2 | | | | | | 2 |
| HZ1000-24-T | M/P-XYLENE | | 2 | | | 1 | | | 3 |
| 007439-95-4 | MAGNESIUM | | | | | | | 1 | 1 |
| 007439-96-5 | MANGANESE | | | | | | | 1 | 1 |
| HZ0900-01-T | METALS N.O.S. | | | | | | | 1 | 1 |
| 000074-82-8 | METHANE | | 2 | | | 1 | | 3 | 6 |
| 000075-09-2 | METHYLENE CHLORIDE | | 3 | | | | | 1 | 4 |
| 007439-98-7 | MOLYBDENUM | | | | | | | 1 | 1 |
| 000142-82-5 | N-HEPTANE | | 1 | | | | | | 1 |

| | | | Number of Records | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **CAS No.** | **Chemical Name** | **IJC Tracking Number** | **Air** | **Biota** | **Human Material** | **Other Media** | **Soil** | **Water** | **Total** |
| 014797-55-8 | NITRATE | | | | | | | 2 | 2 |
| 000111-84-2 | NONANE | | 1 | | | | | | 1 |
| 000109-66-0 | N-PENTANE | | 2 | | | 1 | | | 3 |
| 000111-65-9 | OCTANE | | 1 | | | | | | 1 |
| HZ0600-01-T | OIL/GREASE, UNSPECIFIED | | | | | | | 1 | 1 |
| 000095-47-6 | O-XYLENE | | 2 | | | 1 | | | 3 |
| 000110-62-3 | PENTANAL | | 2 | | | | | | 2 |
| 007440-09-7 | POTASSIUM | | | | | | | 1 | 1 |
| 000074-98-6 | PROPANE | | 1 | | | 1 | | | 2 |
| 000071-23-8 | PROPANOL | | 2 | | | | | | 2 |
| 000078-92-2 | SEC-BUTYL ALCOHOL | | 2 | | | | | | 2 |
| 007440-23-5 | SODIUM | | | | | | | 2 | 2 |
| 000100-42-5 | STYRENE | | 3 | | | | | | 3 |
| 014808-79-8 | SULFATE | | | | | | | 2 | 2 |
| 018496-25-8 | SULFIDE | | | | | | | 1 | 1 |
| 000127-18-4 | TETRACHLOROETHYLENE | | 1 | | | | | | 1 |
| 000108-88-3 | TOLUENE | | 3 | | | 1 | | 1 | 5 |
| 000079-01-6 | TRICHLOROETHYLENE | | 1 | | | | | | 1 |
| 000075-69-4 | TRICHLOROFLUOROMETHANE | | 2 | | | | | | 2 |
| HZ1900-01-T | VOLATILE ORGANIC COMPOUNDS N.O.S. | | 2 | | | 1 | | 1 | 4 |
| 001330-20-7 | XYLENES, TOTAL | | 1 | | | | | | 1 |
| 007440-66-6 | ZINC | | | | | | | 1 | 1 |
| | | | | | | | | 1 | 1 |
| | | **Total Non-IJC** | **89** | **0** | **0** | **15** | **0** | **39** | **143** |
| | | **Total** | **89** | **0** | **0** | **15** | **0** | **40** | **144** |

## Table 3.4-C TRI Releases (in pounds, 2001) for the Cuyahoga River AOC

| Chemical | IJC Tracking Number | Total Air Emissions | Surface Water Discharges | Under-ground Injection | Releases to Land | Total Onsite Releases | Total Offsite Releases | Total On- and Offsite Releases |
|---|---|---|---|---|---|---|---|---|
| DIOXIN AND DIOXIN-LIKE COMPOUNDS | 2 | 0.006514673 | 0 | 0 | 0 | 0.006514673 | 0.06370245 | 0.070217123 |
| *(PCDDs and PCDFs)* | 3 | | | | | | | |
| LEAD | 8 | 6448.830016 | 30.64 | 0 | 5.1 | 6484.570016 | 236809.474 | 243294.044 |
| LEAD COMPOUNDS | 8 | 24518.78246 | 89.1 | 0 | 43891 | 68498.88246 | 84424.09 | 152922.9724 |
| MERCURY | 9 | 0.1 | 0.006 | 0 | 0 | 0.106 | 67.5 | 67.606 |
| MERCURY COMPOUNDS | 9 | 58.74 | 0.1 | 0 | 0 | 58.84 | 11.5 | 70.34 |
| | **Total IJC** | **31026.45899** | **119.846** | **0** | **43896.1** | **75042.40499** | **321312.6277** | **396355.0326** |
| 1,1-DICHLORO-1-FLUOROETHANE | 5868 | 0 | 0 | 0 | 5868 | 0 | 5868 | |
| 1,2,4-TRIMETHYLBENZENE | | 19247 | 0 | 0 | 0 | 19247 | 0 | 19247 |
| 1,3-BUTADIENE | | 10843 | 0 | 0 | 0 | 10843 | 0 | 10843 |
| 1,4-DICHLOROBENZENE | | 540 | 0 | 0 | 0 | 540 | 0 | 540 |
| 1-CHLORO-1,1-DIFLUOROETHANE | 781687 | 0 | 0 | 0 | 781687 | 0 | 781687 | |
| 2-MERCAPTOBENZO-THIAZOLE | 10 | 0 | 0 | 0 | 10 | 750 | 760 | |
| 4,4'-ISOPROPYLIDENE-DIPHENOL | 28 | 0 | 0 | 0 | 28 | 1828 | 1856 | |
| ACRYLIC ACID | | 13 | 0 | 0 | 0 | 13 | 1 | 14 |
| ACRYLONITRILE | | 2998 | 0 | 0 | 0 | 2998 | 623 | 3621 |
| ALLYL ALCOHOL | | 7959 | 0 | 0 | 0 | 7959 | 0 | 7959 |
| ALUMINUM (FUME OR DUST) | 3749 | 300 | 0 | 0 | 4049 | 30783 | 34832 | |
| AMMONIA | | 107113 | 134 | 0 | 0 | 107247 | 12000 | 119247 |
| ANILINE | | 4740 | 0 | 0 | 0 | 4740 | 0 | 4740 |
| ANTIMONY | | 50 | 0 | 0 | 0 | 50 | 5707 | 5757 |
| ANTIMONY COMPOUNDS | | 3610 | 191 | 0 | 583 | 4384 | 27687 | 32071 |
| BARIUM | | 204 | 0 | 0 | 0 | 204 | 0 | 204 |
| BARIUM COMPOUNDS | | 2240 | 438 | 0 | 0 | 2678 | 188309 | 190987 |
| BENZENE | | 24016 | 8 | 0 | 0 | 24024 | 0 | 24024 |
| BENZO(G,H,I)PERYLENE | | 232.225 | 0.3 | 0 | 0 | 232.525 | 204 | 436.525 |
| BUTYL ACRYLATE | | 339 | 0 | 0 | 0 | 339 | 36 | 375 |
| BUTYRALDEHYDE | | 20 | 0 | 0 | 0 | 20 | 0 | 20 |
| CADMIUM | | 21 | 0 | 0 | 0 | 21 | 1000 | 1021 |
| CADMIUM COMPOUNDS | | 79 | 0 | 0 | 0 | 79 | 25836 | 25915 |
| CARBON DISULFIDE | | 6 | 0 | 0 | 0 | 6 | 0 | 6 |
| CERTAIN GLYCOL ETHERS | | 61991 | 0 | 0 | 0 | 61991 | 10034 | 72025 |
| CHLORINE | | 3022 | 498 | 0 | 0 | 3520 | 0 | 3520 |
| CHLORODIFLUOROMETHANE | 5867 | 0 | 0 | 0 | 5867 | 0 | 5867 | |
| CHLOROETHANE | | 2166 | 0 | 0 | 0 | 2166 | 0 | 2166 |
| CHROMIUM | | 1880 | 102 | 0 | 0 | 1982 | 330145.3 | 332127.3 |
| CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION) | 589 | 111 | 0 | 24039 | 24739 | 128318 | 153057 | |
| COBALT | | 10 | 0 | 0 | 0 | 10 | 250 | 260 |
| COBALT COMPOUNDS | | 292 | 0 | 0 | 0 | 292 | 5318 | 5610 |
| COPPER | | 7035 | 279 | 0 | 0 | 7314 | 176210 | 183524 |
| COPPER COMPOUNDS | | 1683 | 305 | 0 | 0 | 1988 | 105857 | 107845 |
| CUMENE | | 209 | 0 | 0 | 0 | 209 | 0 | 209 |
| CYANIDE COMPOUNDS | | 578 | 0 | 0 | 0 | 578 | 250 | 828 |
| CYCLOHEXANE | | 2539 | 0 | 0 | 0 | 2539 | 0 | 2539 |
| DECABROMODIPHENYL OXIDE | 57 | 0 | 0 | 0 | 57 | 50327 | 50384 | |
| DI(2-ETHYLHEXYL) PHTHALATE | 510 | 0 | 0 | 0 | 510 | 4280 | 4790 | |
| DICHLOROMETHANE | | 110482 | 0 | 0 | 0 | 110482 | 317 | 110799 |
| DIETHANOLAMINE | | 157 | 0 | 0 | 0 | 157 | 2505 | 2662 |
| DIISOCYANATES | | 29 | 0 | 0 | 0 | 29 | 21656 | 21685 |
| EPICHLOROHYDRIN | | 1510 | 0 | 0 | 0 | 1510 | 0 | 1510 |

| Chemical | IJC Tracking Number | Total Air Emissions | Surface Water Discharges | Under-ground Injection | Releases to Land | Total Onsite Releases | Total Offsite Releases | Total On- and Offsite Releases |
|---|---|---|---|---|---|---|---|---|
| ETHYLBENZENE | | 9686 | 2 | 0 | 0 | 9688 | 573 | 10261 |
| ETHYLENE | | 1135 | 0 | 0 | 0 | 1135 | 0 | 1135 |
| ETHYLENE GLYCOL | | 835 | 0 | 0 | 37 | 872 | 1509 | 2381 |
| FORMALDEHYDE | | 39615 | 0 | 0 | 0 | 39615 | 97 | 39712 |
| FORMIC ACID | | 28 | 0 | 0 | 0 | 28 | 774 | 802 |
| HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY) | | 352996 | 0 | 0 | 0 | 352996 | 0 | 352996 |
| HYDROGEN FLUORIDE | | 8149 | 0 | 0 | 0 | 8149 | 320 | 8469 |
| HYDROQUINONE | | 6 | 0 | 0 | 0 | 6 | 0 | 6 |
| MALEIC ANHYDRIDE | | 22 | 0 | 0 | 0 | 22 | 128 | 150 |
| MANGANESE | | 1090 | 171 | 0 | 0 | 1261 | 152058 | 153319 |
| MANGANESE COMPOUNDS | | 15720 | 1623 | 0 | 328016 | 345359 | 884801 | 1230160 |
| METHANOL | | 63062 | 0 | 0 | 76012 | 139074 | 3564 | 142638 |
| METHYL ETHYL KETONE | | 263954 | 0 | 0 | 0 | 263954 | 884 | 264838 |
| METHYL ISOBUTYL KETONE | | 8018 | 0 | 0 | 0 | 8018 | 0 | 8018 |
| METHYL METHACRYLATE | | 23138 | 0 | 0 | 0 | 23138 | 0 | 23138 |
| MOLYBDENUM TRIOXIDE | | 562 | 0 | 0 | 0 | 562 | 252 | 814 |
| N,N-DIMETHYLFORMAMIDE | | 7846 | 0 | 0 | 0 | 7846 | 0 | 7846 |
| NAPHTHALENE | | 20831 | 3 | 0 | 0 | 20834 | 0 | 20834 |
| N-BUTYL ALCOHOL | | 7073 | 0 | 0 | 0 | 7073 | 87 | 7160 |
| N-HEXANE | | 27526 | 0 | 0 | 0 | 27526 | 0 | 27526 |
| NICKEL | | 2850 | 27 | 0 | 0 | 2877 | 175837.6 | 178714.6 |
| NICKEL COMPOUNDS | | 746 | 74 | 0 | 3571 | 4391 | 30651 | 35042 |
| NITRATE COMPOUNDS | | 5518 | 101722 | 0 | 0 | 107240 | 52290 | 159530 |
| NITRIC ACID | | 20505 | 33 | 0 | 0 | 20538 | 42830 | 63368 |
| N-METHYL-2-PYRROLIDONE | | 32001 | 0 | 0 | 0 | 32001 | 0 | 32001 |
| PHENOL | | 24964 | 30 | 0 | 0 | 24994 | 550 | 25544 |
| PHOSGENE | | 14 | 0 | 0 | 0 | 14 | 0 | 14 |
| POLYCHLORINATED ALKANES | | 0 | 0 | 0 | 0 | 0 | 585 | 585 |
| POLYCYCLIC AROMATIC COMPOUNDS | | 2220.379 | 1 | 0 | 0 | 2221.379 | 1334.6 | 3555.979 |
| PROPYLENE | | 2188 | 0 | 0 | 0 | 2188 | 0 | 2188 |
| SODIUM NITRITE | | 4208 | 0 | 0 | 0 | 4208 | 41818 | 46026 |
| STYRENE | | 34661 | 0 | 0 | 0 | 34661 | 262 | 34923 |
| SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY) | | 157490 | 0 | 0 | 0 | 157490 | 0 | 157490 |
| TETRACHLORO-ETHYLENE | | 114976 | 5 | 0 | 0 | 114981 | 0 | 114981 |
| THIRAM | | 25 | 0 | 0 | 0 | 25 | 2530 | 2555 |
| TOLUENE | | 330191.77 | 16 | 0 | 0 | 330207.77 | 1207 | 331414.77 |
| TRICHLOROETHYLENE | | 155347 | 0 | 0 | 0 | 155347 | 555 | 155902 |
| TRIETHYLAMINE | | 15390 | 0 | 0 | 0 | 15390 | 0 | 15390 |
| VANADIUM COMPOUNDS | | 62 | 38 | 0 | 16112 | 16212 | 12687 | 28899 |
| VINYL ACETATE | | 1710 | 0 | 0 | 0 | 1710 | 0 | 1710 |
| XYLENE (MIXED ISOMERS) | | 147122.91 | 27 | 0 | 0 | 147149.91 | 3479 | 150628.91 |
| ZINC (FUME OR DUST) | | 30356 | 300 | 0 | 0 | 30656 | 1232 | 31888 |
| ZINC COMPOUNDS | | 22988 | 4500 | 0 | 1269695 | 1297183 | 1810561.2 | 3107744.2 |
| | **Total Non-IJC** | **3133044.284** | **110938.3** | **0** | **1718065** | **4962047.584** | **4353687.7** | **9315735.284** |
| | **Total** | **3164070.743** | **111058.146** | **0** | **1761961.1** | **5037089.989** | **4675000.328** | **9712090.317** |

**Table 3.4-D TRI Facilities Releasing IJC Critical Pollutants Onsite for the Cuyahoga River AOC**

| IJC Critical Pollutant | Number of Facilities | Facility Name | TRIF ID | City |
|---|---|---|---|---|
| **Dioxin and dioxin-like compounds *(PCDDs and PCDFs)*** | **5** | | | |
| Cuyahoga County, OH | 4 | FORD MOTOR CO. CLEVELAND CASTING | 44142FRDMT5600H | BROOK PARK |
| | | FORD MOTOR CO. CLEVELAND ENGINE PLANTS | 44142FRDMT17601 | BROOK PARK |
| | | LAKESHORE PLANT | 44103FRSTN6800S | CLEVELAND |
| | | WABASH ALLOYS L.L.C. | 44109WBSHL4365B | CLEVELAND |
| Summit County, OH | 1 | GOODYEAR TIRE & RUBBER CO. AKRON TECHNICAL CENTER | 44309GDYRT200SM | AKRON |
| **Lead and lead compounds** | **59** | | | |
| Cuyahoga County, OH | 41 | ALCOA CLEVELAND WORKS | 44105LMNMC1600H | CUYAHOGA HEIGHTS |
| | | AMERICAN BRONZE CORP. | 44115MRCNB2941E | CLEVELAND |
| | | AMERICAN SPRING WIRE CORP. | 44146MRCNS26300 | BEDFORD HEIGHTS |
| | | AMERICAN STEEL & WIRE CORP. (CLEVELAND DIV.) | 44125MRCNS4300E | CUYAHOGA HEIGHTS |
| | | ART GALVANIZING WORKS INC. | 44109THRTG3935V | CLEVELAND |
| | | BASIC ALUMINUM CASTINGS CO. | 44110BSCLM1325E | CLEVELAND |
| | | CAST SPECIALTIES INC. | 44128CSTSP26711 | WARRENSVILLE HEIGHTS |
| | | COOPER-STANDARD AUTOMOTIVE | 44102STNDR2130W | CLEVELAND |
| | | CSM INDS. INC. | 44117CLMXS21801 | EUCLID |
| | | DU PONT CLEVELAND REFINISH SERVICE CENTER | 44125DPNTC9200M | GARFIELD HEIGHTS |
| | | FEDERAL METAL CO. | 44146THFDR7250D | OAKWOOD VILLAGE |
| | | FERRO CORP. 130CLEVELAND130 | 44105FRRCR4150E | CLEVELAND |
| | | FORD MOTOR CO. CLEVELAND CASTING | 44142FRDMT5600H | BROOK PARK |
| | | FORD MOTOR CO. CLEVELAND ENGINE PLANTS | 44142FRDMT17601 | BROOK PARK |
| | | FOSECO METALLURGICAL INC. | 44142FSCNC20200 | CLEVELAND |
| | | GE EUCLID LAMP PLANT | 44103GNRLL1814E | CLEVELAND |
| | | GENERAL ENVIRONMENTAL MANAGEMENT L.L.C. | 44115RSRCH2655T | CLEVELAND |
| | | GMC METAL FABRICATING DIV. | 44130CHVRL5400C | PARMA |
| | | GO/DAN INDS. | 44142DNLRD15600 | CLEVELAND |
| | | I. SCHUMANN & CO. | 44146SCHMN22500 | OAKWOOD VILLAGE |
| | | LAKESHORE PLANT | 44103FRSTN6800S | CLEVELAND |
| | | LINCOLN ELECTRIC CO. | 44117LNCLN22801 | EUCLID |
| | | LTV STEEL CO. CLEVELAND WORKS | 44127LTVST3100E | CLEVELAND |
| | | METALDYNE INC. BEDFORD HEIGHTS PLANT | 44146TTLST25661 | BEDFORD HEIGHTS |
| | | MODINE AFTERMARKET HOLDINGS INC. | 44136MDNGR20137 | STRONGSVILLE |
| | | MORGAN ELECTRO CERAMICS | 44146MRGNM232FO | BEDFORD |
| | | NORTH AMERICAN WIRE PRODS. INC. | 44139NRTHM30000 | SOLON |
| | | OATEY CO. | 44135TYCMP4700W | CLEVELAND |
| | | PPG INDS. OHIO INC. (CL) | 44111PPGND3800W | CLEVELAND |
| | | REPUBLIC ANODE FABRICATORS | 44136RPBLC11288 | STRONGSVILLE |
| | | REPUBLIC METALS | 44105RPBLC7930J | CLEVELAND |
| | | RIVER RECYCLING INDS. INC. | 44109RVRRC4195B | CLEVELAND |
| | | S. K. WELLMAN CORP. | 44142SNTRM5372W | BROOKPARK |
| | | SAINT-GOBAIN CRYSTALS & DETECTORS | 44139NGLHR6801C | SOLON |
| | | SHERWOOD | 44102SHRWD1201W | CLEVELAND |

| IJC Critical Pollutant | Number of Facilities | Facility Name | TRIF ID | City |
|---|---|---|---|---|
| | | STANLEY WORKS | 44143STNLY700BE | CLEVELAND |
| | | TDE GROUP INC. | 44139TLDNG28850 | SOLON |
| | | VENTURE LIGHTING INTL. INC. | 44139VNTRL3200A | SOLON |
| | | VICTORY WHITE METAL CO. | 44127VCTRY6100R | CLEVELAND |
| | | WABASH ALLOYS L.L.C. | 44109WBSHL4365B | CLEVELAND |
| | | WYMAN-GORDON FORGINGS (CLEVELAND) INC. | 44127DRPDF3097E | CLEVELAND |
| Summit County, OH | 18 | AMERICHEM INC. | 44221MRCHM225BR | CUYAHOGA FALLS |
| | | CARGILL INC. SALT DIV. | 44314KZSLT2065M | AKRON |
| | | CHEMIONICS CORP. | 44278CHMNC390MU | TALLMADGE |
| | | COMMERCIAL ALLOYS CORP. | 44087CMMRC1831E | TWINSBURG |
| | | GOODYEAR TIRE & RUBBER CO. AKRON MIX CENTER | 44309GDYRT1080R | AKRON |
| | | GOODYEAR TIRE & RUBBER CO. AKRON TECHNICAL CENTER | 44309GDYRT200SM | AKRON |
| | | GOODYEAR TIRE & RUBBER STOW MODEL SHOP | 44224GDYRT1549C | STOW |
| | | HARWICK STANDARD DISTRIBUTION CORP. | 44305RPBLC60SOU | AKRON |
| | | LANCER DISPERSIONS INC. | 44305LNCRD1680E | AKRON |
| | | LOCKHEED MARTIN N.E. & S.S. | 44315LRLCR1210M | AKRON |
| | | METALDYNE | 44087TTTMT8001B | TWINSBURG |
| | | METALLIC RESOURCES INC. | 44087MTLLC2116E | TWINSBURG |
| | | MOTOR PRODS. - OHIO CORP. | 44203MTRPR65ERO | BARBERTON |
| | | NOVEON INC. | 44301BFGDR240WE | AKRON |
| | | POLYMERICS INC. | 44221PLYMR2828S | CUYAHOGA FALLS |
| | | REVLIS CORP. | 44203RVLSC2845N | NORTON |
| | | ROCKWELL AUTOMATION INC. | 44087RCKWL8440D | TWINSBURG |
| | | STRUKTOL CO. OF AMERICA | 44224STRKT201ES | STOW |
| **Mercury and mercury compounds** | **3** | | | |
| Cuyahoga County, OH | 2 | LAKESHORE PLANT | 44103FRSTN6800S | CLEVELAND |
| | | VENTURE LIGHTING INTL. INC. | 44139VNTRL3200A | SOLON |
| Summit County, OH | 1 | GOODYEAR TIRE & RUBBER CO. AKRON TECHNICAL CENTER | 44309GDYRT200SM | AKRON |

**Table 3.4-E NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, Cuyahoga River AOC**

| Chemical | IJC Tracking Number | Discharge |
|---|---|---|
| LEAD TOTAL RECOVERABLE | 8 | 8165.96 |
| LEAD, TOTAL (AS PB) | 8 | 7876.02 |
| MERCURY, TOTAL LOW LEVEL | 9 | 1.58 |
| | **Total IJC** | **16043.56** |
| ARSENIC, TOTAL RECOVERABLE | | 594.77 |
| CADMIUM TOTAL RECOVERABLE | | 599.33 |
| CADMIUM, TOTAL (AS CD) | | 641.45 |
| CHLORINE, TOTAL RESIDUAL | | 1561.36 |
| CHROMIUM TOTAL RECOVERABLE | | 199.60 |
| CHROMIUM, HEXAVALENT DISSOLVED (AS CR) | | 3400.39 |
| CHROMIUM, TOTAL (AS CR) | | 761.36 |
| COPPER TOTAL RECOVERABLE | | 32120.83 |
| COPPER, TOTAL (AS CU) | | 4213.26 |
| CYANIDE, FREE-WATER PLUS WASTEWATERS | | 11114.10 |
| CYANIDE, TOTAL (AS CN) | | 5955.71 |
| CYANIDE, FREE (AMEN. TO CHLORINATION) | | 107.04 |
| NICKEL TOTAL RECOVERABLE | | 94164.53 |
| NICKEL, TOTAL (AS NI) | | 95224.48 |
| NITROGEN, AMMONIA TOTAL (AS N) | | 2844114.26 |
| PHENOLICS, TOTAL RECOVERABLE | | 197.99 |
| PHOSPHORUS, TOTAL (AS P) | | 1703210.91 |
| SILVER, TOTAL (AS AG) | | 26.56 |
| ZINC TOTAL RECOVERABLE | | 70790.19 |
| ZINC, TOTAL (AS ZN) | | 39299.60 |
| | **Total Non-IJC** | **4908297.69** |
| | **Total** | **4924341.25** |

**Table 3.4-F NPDES Facilities Permitted to Discharge IJC Critical Pollutants**
**Cuyahoga River AOC**

| IJC Critical Pollutant | Number of Facilities | Facility Name | NPDES | City |
|---|---|---|---|---|
| **Lead** | **7** | | | |
| Cuyahoga County, OH | 6 | AMERICAN STEEL & WIRE | OH0002160 | CUYAHOGA HEIGHTS |
| | | ARGO TECH CORPORATION | OH0000281 | CLEVELAND |
| | | ISG CLEVELAND | OH0000957 | CLEVELAND |
| | | CITY OF BEDFORD HEIGHTS | OH0024058 | BEDFORD HEIGHTS |
| | | CITY OF NORTH ROYALTON | OH0026794 | NORTH ROYALTON |
| | | ZACLON INC | OH0000990 | CLEVELAND |
| Summit County, OH | 1 | CITY OF AKRON | OH0023833 | AKRON |
| **Mercury** | **6** | | | |
| Cuyahoga County, OH | 4 | CITY OF BEDFORD | OH0024040 | BEDFORD |
| | | CITY OF BEDFORD HEIGHTS | OH0024058 | BEDFORD HEIGHTS |
| | | CITY OF NORTH OLMSTED | OH0026778 | NORTH OLMSTED |
| | | SOLON CITY CENTRAL | OH0027430 | SOLON |
| Summit County, OH | 2 | CITY OF BARBERTON | OH0024007 | BARBERTON |
| | | CITY OF TWINSBURG | OH0027863 | TWINSBURG |

## 3.5 BLACK RIVER AOC, LORAIN COUNTY, OH

The Black River AOC encompasses the entire Black River watershed, located primarily in Lorain County. The east and west branches of the river flow north, joining to form the mainstem of the Black River, which flows 16 miles north to discharge into Lake Erie at the port of the City of Lorain.

### 3.5.1 Hazardous Waste Sites Relevant to the Black River AOC

ATSDR has evaluated the data for hazardous waste sites in Lorain County, and reached conclusions regarding the public health threat posed by these sites. These conclusions, along with information regarding the type and location of the site, and the date and type of assessment document, are summarized in Table 3.5-A for sites that at any time had Public Health Hazard Categories of 1-3.

**Table 3.5-A Hazardous Waste Sites in Lorain County, OH**

| Site Name | Public Health Hazard Category | EPA NPL Status | Site ID | City |
|---|---|---|---|---|
| Ford Rd Industrial Landfill | 3 (2002 HC) | Non NPL | OHD980510002 | Elyria |
| Republic Steel Corp. Quarry | 3 (1989 HA)<br>4 (n.d. SR) | Deleted Post SARA | OHD980903447 | Elyria |

3 = Indeterminate Public Health Hazard, 4 = No Apparent Public Health Hazard
HA = Public Health Assessment, HC = Health Consultation, SR = Site Review and Update
n.d. = no date provided

For the listed hazardous waste sites, the number of contaminant records in HazDat that exceeded health based-screening values was 230, as shown in Table 3.5-B. Most of the records were for the soil media group; water had the next highest number of records.

The IJC Great Lakes critical pollutants accounted for 21 (9.1%) of these records, and all were for the soil media group. The IJC critical pollutants that have been found at Lorain County OH hazardous waste sites at concentrations exceeding health-based screening values are: PCBs (including aroclors 1242, 1254, and 1260), DDT and metabolites, dieldrin, lead, and mercury. Details are provided in Table 3.5-C.

ATSDR provides further evaluation of these data in the Public Health Assessment and other health-related documents listed in Table 3.5-A. These evaluations are discussed in the following subsections.

#### 3.5.1.1 Ford Road Industrial Landfill

This site is an inactive 15-acre landfill located in Elyria, and bordering on the Black River. The landfill was originally a ravine, but has been filled by the waste disposed there. The site is not fenced, accessible from all sides, and within 1 mile of several residences. Surface water at the site flows directly, as runoff, into the Black River, and also into an intermittent stream that drains into the Black River, and into a ravine, from whence runoff enters a wetland that drains into the Black River. Groundwater flows toward the Black River. The site was used for the disposal of industrial wastes from the 1950s until 1974. The wastes, from several local industries, included

organics, inorganics, heavy metals, pesticides, catalysts, sanitary sewage sludges, paint sludges, latex sludges, and small quantities of unknown hazardous wastes. The wastes were frequently burned after dumping; several areas of exposed ash are visible. Closing and capping of the landfills was not completed under EPA supervision or guidelines, the cap is sagging, and a number of drums and other wastes including ash are visible. The landfill is unlined. The EPA reported (2006) that a landfill gas monitoring system was formally approved by Ohio EPA in early 2006 and was implemented. Sampling results have shown that no landfill gas is migrating through the existing cap.

The EPA reported (2006) they negotiated an Administrative Order by Consent (AOC) with a group of potentially responsible parties (PRPs) to conduct a remedial investigation/feasibility study (RI/FS) at the site in 2002. This work was completed in 2005 and a Record of Decision (ROD) outlining the preferred remedial action to clean up the site was signed in September 2006.

**Category of Public Health Hazard:** This site was previously categorized as an *Indeterminate Public Health Hazard* (Category 3) because of the lack of current environmental monitoring data and the fact that the available data did not provide a complete picture of the extent of contamination. However, with the completion of the RI/FS and the ROD, this site will need to be reevaluated to determine its correct category placement.

**Contaminants of Concern in Completed Exposure Pathways:** The EPA reported (2006) that based on the findings of the RI/FS and the risk assessment conducted at the site, the following contaminants of potential concern (COPCs) were identified:

- for soil and sediment, COPS are PAHs, PCBs, and metals;
- for surface water the COPCs are one SVOC (bis[2-ethyl]phthalate) and five metals (aluminum, antimony, arsenic, iron, and thallium);
- for groundwater, the COPCs are two VOCs (benzene and vinyl chloride)), one SVOC (bis[2-ethyl]phthalate), PCBs, and several metals; and
- for leachate, the COPCs are two VOCs (benzene and chloroform), one SVOC (bis[2-ethyl]phthalate), three pesticides (beta-BHC, dieldrin, and heptachlor), and several metals.

The EPA reported (2006) that one primary exposure pathway for human receptors is incidental ingestion of and dermal contact with soil at the site. The exposure to COPCs in soil via the inhalation pathway is not expected to be significant, though, since soil COPCs consist primarily if inorganics, PCBs, and PAHs and the majority of site soils are covered with vegetation, which mitigates the potential for generation of fugitive dust.

The EPA reported (2006) that potential exposure to COPCs in groundwater is not expected to be significant since no active potable wells are in use within a one-mile radius of the Site. This was confirmed by City of Elyria Water Department records which document that the 10 residences identified in a search of Ohio DNR water well logs had installed wells between the mid-1950s and mid-1960, but they are all currently connected to the public water supply. In addition, the depth to groundwater (2004 data range from 4.5 to 26 feet below the ground surface) prevents

exposure to COPCs in groundwater via direct contact. Also, several potential seep locations were identified onsite, but exposure to leachate is not expected to be significant due to the limited nature of the seeps coupled with the dense vegetation along the slopes of the landfill.

The EPA reported (2006) that the Black River adjacent to the Site may be used for recreational activities such as fishing, wading, and swimming. Therefore, recreational receptors (i.e., children and adults) may be exposed to sediment and surface water within the Black River via incidental ingestion and dermal contact exposure pathways. However, the intermittent stream adjacent to the Site is relatively small and is only inundated during significant rain events, which precludes its use for recreational activities such as fishing, swimming, or wading. Therefore, surface water from the ditch adjacent to the Site is not expected to present significant exposure pathways. Due to the ephemeral nature of the intermittent stream, recreational receptors may be exposed to substrate (i.e., soil/sediment) within the stream channel.

The EPA reports (2006) that the consumption of contaminated fish from the Black River is a potentially complete exposure pathway. The observations of site-related PCB concentrations in the sediment at the edge of the river indicate that the fish ingestion exposure pathway is potentially complete. PCBs are known to bioaccumulate in fish and have been identified as a COPC for sediment.

**Demographics:** The EPA reported (2006) that there is a residential area located directly across Ford Road, west of the site.

**Public Health Outcome Data:** Not reported.

**Conclusions:** The Ford Road Industrial Landfill is currently being addressed under the USPEA Superfund Program. The EPA reported (2006) that it is anticipated that a Consent Decree with the responsible parties will be finalized in 2007 and work to implement the actions outlined in the ROD will begin shortly thereafter. This will address any previous issues raised at the site.

#### 3.5.1.2 Republic Steel Corp. Quarry

The site includes a 4-acre quarry and about seven acres (as reported by EPA, 2006) of wooded land surrounding the quarry. It was originally a sandstone quarry. From 1950 to1975, Republic Steel Corp. used the quarry as a disposal site for waste pickle liquor consisting of sulfuric acid and dissolved metal oxides, and for rinse water from pickling operations. The waste was carried from the plant to the quarry by a ditch. Information regarding this site is taken from the 1989 ATSDR preliminary health assessment for this site, HazDat, and the 2003 EPA NPL fact sheet for the site.

**Category of Public Health Hazard:** This site was categorized by the 1989 ATSDR health assessment as an *Indeterminate Public Health Hazard* (Category 3) because of the potential threat to human health from exposure to contaminants in quarry water and sediment, soil and dust, and possibly in fish. Contaminants of concern included the IJC critical pollutants B(a)P and lead. A subsequent ATSDR site review and update concluded that the site poses *No Apparent Public Health Hazard* (Category 4). The site was remediated after the original 1989 health assessment was completed.

**Contaminants of Concern in Completed Exposure Pathways:** None identified. In the 1989 ATSDR health assessment, contaminants of concern included the IJC critical pollutants B(a)P and lead.

**Demographics:** The demographic profile, from the 2000 U.S. Census, for vulnerable populations living within one mile of this site:

| | |
|---|---|
| Children 6 years and younger | 1,400 |
| Females aged 15-44 | 2,469 |
| Adults 65 and older | 1,539 |

**Public Health Outcome Data:** Not reported.

**Conclusions:** The Republic Steel Corp. Quarry site may have contributed to the environmental burden of the IJC critical pollutants B(a)P and lead in the past. As reported in the EPA fact sheet, remediation of the site, including removal of sediment and soils from the drainage ditch and hot spots near the edge of the quarry, has occurred. Contaminated quarry sediments were left in place because the contaminants were below the mixing zone, and remediation could entrain contaminated sediments in the water, increasing the hazard. Fencing was to be improved. The EPA reported (2006) that an ordinance was passed by the city of Elyria to prohibit the use of groundwater as well as the use of the quarry for recreational purposes. In addition, the property zoning will be maintained as heavy industrial use only. Continued periodic monitoring of quarry surface water, quarry fish tissue, and groundwater were recommended. Deletion of the site from the NPL was finalized in December 2002.

### 3.5.2. TRI Data for the Black River AOC

The TRI onsite chemical releases for Lorain County, OH, are summarized in Table 3.5-C. Total onsite releases in 2001 were 2,940,334 pounds, the majority of which were released to air. Small amounts were released to surface water.

Only 9,594 pounds (0.3% of the total onsite releases) were IJC critical pollutants. The IJC critical pollutants released were PCDDs and PCDFs (to air), aldrin (to air), lead and lead compounds (to air and surface water), mercury and mercury compounds (primarily to air), toxaphene (to air), and hexachlorobenzene (to air). The facilities that released these pollutants are listed in Table 3.5-D.

The major releases ($\geq$ 500,000 pounds) of non-IJC chemicals were of hydrochloric acid and sulfuric acid aerosols (to air). No releases occurred in the 300,000-499,999 pound range. One chemical was released in the 150,000-299,999 pound range: xylenes (primarily to air).

### 3.5.3 NPDES Data for the Black River AOC

The NPDES permitted discharges for Lorain County, OH are summarized in Table 3.5-E. The total average annual permitted discharges in 2004 were 238,315 pounds, the majority of which was phosphorus and ammonia nitrogen.

The IJC critical pollutants lead (approximately 620 pounds) and mercury (<1 pound) were permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.5-F.

### 3.5.4 County Demographic and Health Status Data for the Black River AOC

The demographic profile, from the 2000 U.S. Census, for vulnerable populations living in Lorain County, OH, is as follows:

| | |
|---|---|
| Children 6 years and younger | 28,198 |
| Females aged 15-44 | 60,297 |
| Adults 65 and older | 35,583 |

According to the 2000 HRSA community health status reports, health status indicators that compared unfavorably with the U.S. indicators and also with the median of the peer counties for the Lorain County, OH were as follows (indicators that were above the upper limit of the peer county range are bolded):

Infant mortality (per 1,000 births)
- **infant mortality**
- **white infant mortality**
- **neonatal infant mortality**

Birth Measures (as percent)
- **unmarried mothers**
- no care in first trimester

Death measures (per 100,000 population)
- **breast cancer (female)**
- colon cancer
- coronary heart disease
- lung cancer

### 3.5.5 Summary and Conclusions for the Black River AOC, Lorain County, OH

#### 3.5.5.1 Hazardous Waste Sites

Only two hazardous waste sites in Lorain County have ever been categorized by ATSDR in health hazard Categories 1-3. Based on the documents for these sites reviewed in Section 3.1.1, there is no clear evidence that human exposure to site-related IJC critical pollutants is currently occurring at concentrations or doses that exceed health-based screening values. The Republic Steel Quarry Site has been remediated by removal of contaminated soil and exposure is prevented by restriction of access to the site. Contaminants remain in the quarry sediment, but are below the mixing zone. In the past, this site may have contributed to the environmental burden of the IJC critical pollutants B(a)P and lead, and it still may serve as a reservoir of these contaminants.

The Ford Road Industrial Landfill, however, has been investigated adequately, but it has not been remediated, yet at this point in time as reported by the EPA (2006). It is situated on the

Black River and surface water and groundwater flow is toward the Black River. This site may have contributed and may continue to contribute to the Black River AOC's environmental burden of the IJC critical pollutants including PCBs. The EPA reported (2006) that it is planned that the existing contamination will be addressed under a negotiated Consent Decree to implement the clean up alternatives outlined in the ROD. This will prevent any further contamination of the Black River by the Ford Road Site.

Public health outcome data were not available for these sites.

Agricultural and storm water runoff, sedimentation from habitat loss and rapid construction growth, combined sewage overflow (CSO), and failing home sewage treatment systems are non-point sources of water quality degradation and are current issues of concern to the community as reported by EPA (June 2004).

**Issues for Follow-Up**

Ford Road Industrial Landfill - in its 2002 health consultation, ATSDR concluded that up-to-date and more extensive monitoring data are needed to characterize the extent of the contamination and whether contaminants are leaching from the landfill into the Black River. Sampling of fish tissue may be needed. Access to the site should be restricted to protect children from the exposed drums and waste. However, the EPA reported (2006) that with the current completion of the RI/FS and the ROD and the anticipated start of the clean up of the Site, there are no longer any issues to follow up on at this time.

Republic Steel Corp. Quarry - continued periodic monitoring of quarry surface water, quarry fish tissue, and groundwater were recommended by EPA in 1998 (as per the EPA NPL fact sheet for this site) and had been recommended by ATSDR in the 1989 health assessment. However, remediation of the site has occurred. Deletion of the site from the NPL was finalized in December 2002.

### 3.5.5.2 TRI Data

Onsite TRI releases in Lorain County totaled 2,940,333.5 pounds, primarily to air. Of this, 9,594 pounds (0.3%) were IJC critical pollutants. The IJC critical pollutants were PCDDs and PCDFs (to air), aldrin (to air), lead and lead compounds (to air and surface water), mercury and mercury compounds (primarily to air), toxaphene (to air), and hexachlorobenzene (to air).

### 3.5.5.3 NPDES Data

The NPDES permitted discharges for Lorain County, OH are summarized in Table 3.5-E. The total average annual permitted discharges in 2004 were 238,315 pounds, the majority of which was phosphorus and ammonia nitrogen.

The IJC critical pollutants lead (approximately 620 pounds) and mercury (<1 pound) were permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.5-F.

#### 3.5.5.4 County Demographics and Health Status Indicators

Members of vulnerable populations in Lorain County totaled 124,078. A number of Lorain County health status indicators compared unfavorably with both U.S. indicators and with the median of peer county indicators. These included infant mortality measures (infant mortality, white infant mortality, neonatal infant mortality), birth measures (higher percent unmarried mothers and no care in first trimester), and deaths from various cancers (breast, colon, and lung) and coronary heart disease. Infant mortality (white and neonatal), unmarried mothers, and breast cancer (females) were the indicators that were higher than the upper limit of the range for peer counties.

#### 3.5.5.5 Beneficial Use Impairments (BUIs)

Of the three health-related BUIs, restrictions on fish and wildlife consumption and drinking water and beach closings were all listed as impaired at this AOC site. Further information is available at the EPA web site (http://www.epa.gov/glnpo/aoc/)

**Table 3.5-B Waste Site Contaminants that Exceeded Health-Based Screening Values**
**Black River AOC**

| | | | Number of Records | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **CAS No.** | **Chemical Name** | **IJC Tracking Number** | **Air** | **Biota** | **Human Material** | **Other Media** | **Soil** | **Water** | **Total** |
| 053469-21-9 | AROCLOR 1242 | 1 | | | | | 2 | | 2 |
| 011097-69-1 | AROCLOR 1254 | 1 | | | | | 1 | | 1 |
| 011096-82-5 | AROCLOR 1260 | 1 | | | | | 1 | | 1 |
| 001336-36-3 | POLYCHLORINATED BIPHENYLS | 1 | | | | | 2 | | 2 |
| 000050-32-8 | BENZO(A)PYRENE | 4 | | | | | 4 | | 4 |
| 000072-55-9 | DDE, P,P'- | 5 | | | | | 1 | | 1 |
| 000050-29-3 | DDT, P,P'- | 5 | | | | | 2 | | 2 |
| 000060-57-1 | DIELDRIN | 6 | | | | | 1 | | 1 |
| 007439-92-1 | LEAD | 8 | | | | | 5 | | 5 |
| 007439-97-6 | MERCURY | 9 | | | | | 2 | | 2 |
| | | **Total IJC** | **0** | **0** | **0** | **0** | **21** | **0** | **21** |
| 000071-55-6 | 1,1,1-TRICHLOROETHANE | | | | | | | 1 | 1 |
| 000075-34-3 | 1,1-DICHLOROETHANE | | | | | | | 1 | 1 |
| 000156-59-2 | 1,2-DICHLOROETHENE, CIS- | | | | | | | 1 | 1 |
| 000078-93-3 | 2-BUTANONE | | | | | | 4 | | 4 |
| 000091-57-6 | 2-METHYLNAPHTHALENE | | | | | | 2 | | 2 |
| 000083-32-9 | ACENAPHTHENE | | | | | | 2 | | 2 |
| 000208-96-8 | ACENAPHTHYLENE | | | | | | 1 | | 1 |
| 000067-64-1 | ACETONE | | | | | | 4 | 1 | 5 |
| 007429-90-5 | ALUMINUM | | | | | | 2 | 3 | 5 |
| 000120-12-7 | ANTHRACENE | | | | | | 2 | | 2 |
| 007440-36-0 | ANTIMONY | | | | | | 1 | 1 | 2 |
| 007440-38-2 | ARSENIC | | | | | | 5 | 1 | 6 |
| 007440-39-3 | BARIUM | | | | | | 4 | 6 | 10 |
| 000071-43-2 | BENZENE | | | | | | | 1 | 1 |
| 000056-55-3 | BENZO(A)ANTHRACENE | | | | | | 6 | | 6 |
| 000205-99-2 | BENZO(B)FLUORANTHENE | | | | | | 6 | | 6 |
| 000191-24-2 | BENZO(GHI)PERYLENE | | | | | | 4 | | 4 |
| 000207-08-9 | BENZO(K)FLUORANTHENE | | | | | | 2 | | 2 |
| 000085-68-7 | BUTYL BENZYL PHTHALATE | | | | | | 3 | | 3 |
| 007440-43-9 | CADMIUM | | | | | | 2 | 2 | 4 |
| 007440-70-2 | CALCIUM | | | | | | 6 | 6 | 12 |
| 000086-74-8 | CARBAZOLE | | | | | | 2 | | 2 |
| 007440-47-3 | CHROMIUM | | | | | | 6 | | 6 |
| 000218-01-9 | CHRYSENE | | | | | | 2 | | 2 |
| 005103-71-9 | CIS-CHLORDANE | | | | | | 2 | | 2 |
| 007440-48-4 | COBALT | | | | | | 2 | 1 | 3 |
| 007440-50-8 | COPPER | | | | | | 2 | | 2 |
| 000057-12-5 | CYANIDE | | | | | | 1 | | 1 |
| 000117-81-7 | DI(2-ETHYLHEXYL)PHTHALATE | | | | | | 6 | | 6 |
| 000053-70-3 | DIBENZO(A,H)ANTHRACENE | | | | | | 2 | | 2 |
| 000084-66-2 | DIETHYL PHTHALATE | | | | | | 1 | | 1 |
| 000084-74-2 | DI-N-BUTYL PHTHALATE | | | | | | 2 | 1 | 3 |
| 007421-93-4 | ENDRIN ALDEHYDE | | | | | | 1 | | 1 |
| 000206-44-0 | FLUORANTHENE | | | | | | 1 | | 1 |
| 000086-73-7 | FLUORENE | | | | | | 2 | | 2 |
| 000319-86-8 | HEXACHLOROCYCLOHEXANE, DELTA- | | | | | | 1 | | 1 |
| 000193-39-5 | INDENO(1,2,3-CD)PYRENE | | | | | | 2 | | 2 |
| HZ0300-21-T | INORGANIC CHEMICALS | | | | | | 2 | 1 | 3 |
| 007439-89-6 | IRON | | | | | | 6 | 6 | 12 |
| 007439-95-4 | MAGNESIUM | | | | | | 2 | 2 | 4 |

| | | | Number of Records | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **CAS No.** | **Chemical Name** | **IJC Tracking Number** | **Air** | **Biota** | **Human Material** | **Other Media** | **Soil** | **Water** | **Total** |
| 007439-96-5 | MANGANESE | | | | | | 4 | 6 | 10 |
| HZ0900-01-T | METALS N.O.S. | | | | | | 1 | 1 | 2 |
| 000075-09-2 | METHYLENE CHLORIDE | | | | | | | 3 | 3 |
| 000091-20-3 | NAPHTHALENE | | | | | | 2 | | 2 |
| 007440-02-0 | NICKEL | | | | | | 2 | 3 | 5 |
| HZ0600-01-T | OIL/GREASE, UNSPECIFIED | | | | | | 2 | | 2 |
| 000087-86-5 | PENTACHLOROPHENOL | | | | | | 1 | | 1 |
| HZ1200-01-T | PESTICIDES N.O.S. | | | | | | 1 | | 1 |
| 000085-01-8 | PHENANTHRENE | | | | | | 2 | | 2 |
| 130498-29-2 | POLYCYCLIC AROMATIC HYDROCARBONS | | | | | | 2 | | 2 |
| 007440-09-7 | POTASSIUM | | | | | | 2 | 3 | 5 |
| 000129-00-0 | PYRENE | | | | | | 3 | | 3 |
| 007782-49-2 | SELENIUM | | | | | | 1 | 1 | 2 |
| HZ1900-02-T | SEMIVOLATILE ORGANIC COMPOUNDS N.O.S. | | | | | | 3 | 2 | 5 |
| 007440-22-4 | SILVER | | | | | | 1 | | 1 |
| 007440-23-5 | SODIUM | | | | | | | 2 | 2 |
| 025322-20-7 | TETRACHLOROETHANE | | | | | | 1 | | 1 |
| 005103-74-2 | TRANS-CHLORDANE | | | | | | 1 | | 1 |
| 007440-62-2 | VANADIUM | | | | | | 2 | | 2 |
| HZ1900-01-T | VOLATILE ORGANIC COMPOUNDS N.O.S. | | | | | | 2 | 2 | 4 |
| 007440-66-6 | ZINC | | | | | | 2 | | 2 |
| 000132-64-9 | DIBENZOFURAN | | | | | | 2 | | 2 |
| MEDEXP-00-0 | | | | 1 | | | 2 | 2 | 5 |
| | | | | 2 | | 1 | 2 | 3 | 8 |
| | | **Total Non-IJC** | **0** | **3** | **0** | **1** | **142** | **63** | **209** |
| | | **Total** | **0** | **3** | **0** | **1** | **163** | **63** | **230** |

## Table 3.5-C TRI Releases (in pounds, 2001) for the Black River AOC

| Chemical | IJC Tracking Number | Total Air Emissions | Surface Water Discharges | Under-ground Injection | Releases to Land | Total Onsite Releases | Total Offsite Releases | Total On- and Offsite Releases |
|---|---|---|---|---|---|---|---|---|
| DIOXIN AND DIOXIN-LIKE COMPOUNDS | 2 | 0.00507877 | No data | 0 | 0 | 0.0050787 | 0 | 0.00507877 |
| *(PCDDs and PCDFs)* | 3 | | | | | | | |
| ALDRIN | 6 | 0.03 | No data | 0 | 0 | 0.03 | 0 | 0.03 |
| LEAD | 8 | 6790.8587 | 2260 | 0 | 0 | 9050.8587 | 105199.916 | 114250.775 |
| LEAD COMPOUNDS | 8 | 212.85 | 0.82 | 0 | 0 | 213.67 | 47719 | 47932.67 |
| MERCURY | 9 | 1.1 | 0.14 | 0 | 0 | 1.24 | 2.3 | 3.54 |
| MERCURY COMPOUNDS | 9 | 328.27 | 0.02 | 0 | 0 | 328.29 | 216 | 544.29 |
| TOXAPHENE | 10 | 0.1 | No data | 0 | 0 | 0.1 | 0 | 0.1 |
| HEXACHLOROBENZENE | 11 | 0.23 | No data | 0 | 0 | 0.23 | 0 | 0.23 |
| | **Total IJC** | **7333.44377** | **2260.98** | **0** | **0** | **9594.4237** | **153137.216** | **162731.640** |
| 1,1,1-TRICHLOROETHANE | | 64 | No data | 0 | 0 | 64 | 5 | 69 |
| 1,1,2-TRICHLOROETHANE | | 3 | No data | 0 | 0 | 3 | 0 | 3 |
| 1,2,4-TRIMETHYLBENZENE | | 24676 | 0 | 0 | 0 | 24676 | 0 | 24676 |
| 1,2-DICHLOROBENZENE | | 4 | No data | 0 | 0 | 4 | 0 | 4 |
| 1,2-DICHLOROETHANE | | 5 | No data | 0 | 0 | 5 | 0 | 5 |
| 1,2-PHENYLENEDIAMINE | | 28 | No data | 0 | 0 | 28 | 0 | 28 |
| 1,3-PHENYLENEDIAMINE | | 28 | No data | 0 | 0 | 28 | 0 | 28 |
| 1,4-DIOXANE | | 3 | No data | 0 | 0 | 3 | 0 | 3 |
| 2,4,6-TRICHLOROPHENOL | | 9 | No data | 0 | 0 | 9 | 0 | 9 |
| 2,4-DINITROTOLUENE | | 3 | No data | 0 | 0 | 3 | 0 | 3 |
| ACETONITRILE | | 76 | No data | 0 | 0 | 76 | 27 | 103 |
| ACRYLAMIDE | | 1289 | No data | 0 | 0 | 1289 | 0 | 1289 |
| ACRYLIC ACID | | 1647 | No data | 0 | 0 | 1647 | 0 | 1647 |
| ACRYLONITRILE | | 3634 | No data | 0 | 0 | 3634 | 0 | 3634 |
| ALACHLOR | | 5 | No data | 0 | 0 | 5 | 0 | 5 |
| ALLYL ALCOHOL | | 18 | No data | 0 | 0 | 18 | 0 | 18 |
| ALUMINUM (FUME OR DUST) | | 5148 | 37 | 0 | 0 | 5185 | 1120 | 6305 |
| AMMONIA | | 10519 | 0 | 0 | 0 | 10519 | 0 | 10519 |
| ANILINE | | 39 | No data | 0 | 0 | 39 | 0 | 39 |
| ANTIMONY COMPOUNDS | | 500 | 5 | 0 | 0 | 505 | 12192 | 12697 |
| ARSENIC | | 0 | No data | 0 | 0 | 0 | 12034 | 12034 |
| ARSENIC COMPOUNDS | | 369 | 5 | 0 | 0 | 374 | 21684 | 22058 |
| ATRAZINE | | 5 | No data | 0 | 0 | 5 | 0 | 5 |
| BARIUM COMPOUNDS | | 1265 | 255 | 0 | 0 | 1520 | 199172 | 200692 |
| BENZENE | | 141 | 3 | 0 | 0 | 144 | 0 | 144 |
| BENZOYL CHLORIDE | | 267 | 0 | 0 | 0 | 267 | 0 | 267 |
| BIPHENYL | | 3 | No data | 0 | 0 | 3 | 0 | 3 |
| BUTYL ACRYLATE | | 1756 | No data | 0 | 0 | 1756 | 0 | 1756 |
| CARBON DISULFIDE | | 116500 | No data | 0 | 0 | 116500 | 0 | 116500 |
| CARBON TETRACHLORIDE | | 19 | No data | 0 | 0 | 19 | 0 | 19 |
| CERTAIN GLYCOL ETHERS | | 62212 | No data | 0 | 0 | 62212 | 0 | 62212 |
| CHLORDANE | | 1 | No data | 0 | 0 | 1 | 0 | 1 |
| CHLORINE | | 1857 | No data | 0 | 0 | 1857 | 0 | 1857 |
| CHLOROBENZENE | | 29 | No data | 0 | 0 | 29 | 0 | 29 |
| CHLOROFORM | | 22 | No data | 0 | 0 | 22 | 0 | 22 |
| CHROMIUM | | 371 | 395 | 0 | 0 | 766 | 1725 | 2491 |
| CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION) | | 1353 | 255 | 0 | 0 | 1608 | 103912 | 105520 |
| COBALT COMPOUNDS | | 500 | 5 | 0 | 0 | 505 | 2063 | 2568 |
| COPPER | | 940 | 2405 | 0 | 0 | 3345 | 15003 | 18348 |
| COPPER COMPOUNDS | | 959 | 255 | 0 | 0 | 1214 | 69819 | 71033 |
| CREOSOTE | | 9 | No data | 0 | 0 | 9 | 0 | 9 |

| Chemical | IJC Tracking Number | Total Air Emissions | Surface Water Discharges | Under-ground Injection | Releases to Land | Total Onsite Releases | Total Offsite Releases | Total On- and Offsite Releases |
|---|---|---|---|---|---|---|---|---|
| CRESOL (MIXED ISOMERS) | | 7 | No data | 0 | 0 | 7 | 0 | 7 |
| CYANIDE COMPOUNDS | | 14 | No data | 0 | 0 | 14 | 0 | 14 |
| CYCLOHEXANE | | 62 | No data | 0 | 0 | 62 | 0 | 62 |
| CYCLOHEXANOL | | 10 | No data | 0 | 0 | 10 | 0 | 10 |
| DI(2-ETHYLHEXYL) PHTHALATE | | 3 | No data | 0 | 0 | 3 | 755 | 758 |
| DIBUTYL PHTHALATE | | 3 | No data | 0 | 0 | 3 | 0 | 3 |
| DICHLOROMETHANE | | 19126 | No data | 0 | 0 | 19126 | 5 | 19131 |
| DIISOCYANATES | | 74 | No data | 0 | 0 | 74 | 5 | 79 |
| DIMETHYL PHTHALATE | | 24 | No data | 0 | 0 | 24 | 0 | 24 |
| DIMETHYL SULFATE | | 24 | No data | 0 | 0 | 24 | 0 | 24 |
| EPICHLOROHYDRIN | | 4 | No data | 0 | 0 | 4 | 0 | 4 |
| ETHYL ACRYLATE | | 5486 | No data | 0 | 0 | 5486 | 0 | 5486 |
| ETHYLBENZENE | | 26811 | 3 | 0 | 0 | 26814 | 5 | 26819 |
| ETHYLENE GLYCOL | | 83 | No data | 0 | 0 | 83 | 48 | 131 |
| FORMALDEHYDE | | 50 | No data | 0 | 0 | 50 | 0 | 50 |
| FORMIC ACID | | 4 | No data | 0 | 0 | 4 | 0 | 4 |
| HEPTACHLOR | | 1 | No data | 0 | 0 | 1 | 0 | 1 |
| HYDRAZINE | | 15 | No data | 0 | 0 | 15 | 0 | 15 |
| HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY) | | 1495678 | No data | 0 | 0 | 1495678 | 0 | 1495678 |
| HYDROGEN FLUORIDE | | 96202 | 0 | 0 | 0 | 96202 | 0 | 96202 |
| MALEIC ANHYDRIDE | | 4 | No data | 0 | 0 | 4 | 0 | 4 |
| MANGANESE | | 3737 | 14000 | 0 | 0 | 17737 | 124000 | 141737 |
| MANGANESE COMPOUNDS | | 1070 | 10 | 0 | 0 | 1080 | 58381 | 59461 |
| METHANOL | | 26021 | No data | 0 | 0 | 26021 | 58 | 26079 |
| METHOXYCHLOR | | 0.72 | No data | 0 | 0 | 0.72 | 0 | 0.72 |
| METHYL ETHYL KETONE | | 13368 | No data | 0 | 0 | 13368 | 1887 | 15255 |
| METHYL ISOBUTYL KETONE | | 8714 | No data | 0 | 0 | 8714 | 5 | 8719 |
| METHYL METHACRYLATE | | 3230 | No data | 0 | 0 | 3230 | 5 | 3235 |
| METHYL TERT-BUTYL ETHER | | 400 | No data | 0 | 0 | 400 | 0 | 400 |
| MOLYBDENUM TRIOXIDE | | 2015 | 5 | 0 | 0 | 2020 | 2975 | 4995 |
| N,N-DIMETHYLFORMAMIDE | | 44 | No data | 0 | 0 | 44 | 0 | 44 |
| NAPHTHALENE | | 110 | No data | 0 | 0 | 110 | 0 | 110 |
| N-BUTYL ALCOHOL | | 13352 | No data | 0 | 0 | 13352 | 5 | 13357 |
| N-HEXANE | | 4210 | 0 | 0 | 0 | 4210 | 5 | 4215 |
| NICKEL | | 899 | 200 | 0 | 0 | 1099 | 420 | 1519 |
| NICKEL COMPOUNDS | | 787 | 255 | 0 | 0 | 1042 | 36582 | 37624 |
| NITRATE COMPOUNDS | | 81 | 24000 | 0 | 0 | 24081 | 0 | 24081 |
| NITRIC ACID | | 46 | 0 | 0 | 0 | 46 | 6211 | 6257 |
| NITROBENZENE | | 3 | No data | 0 | 0 | 3 | 0 | 3 |
| N-METHYL-2-PYRROLIDONE | | 10 | No data | 0 | 0 | 10 | 0 | 10 |
| N-METHYLOLACRYLAMIDE | | 1260 | No data | 0 | 0 | 1260 | 0 | 1260 |
| PHENOL | | 34616 | No data | 0 | 0 | 34616 | 0 | 34616 |
| PHTHALIC ANHYDRIDE | | 34 | No data | 0 | 0 | 34 | 0 | 34 |
| POLYCYCLIC AROMATIC COMPOUNDS | | 9.534 | 0 | 0 | 0 | 9.534 | 0 | 9.534 |
| P-PHENYLENEDIAMINE | | 28 | No data | 0 | 0 | 28 | 0 | 28 |
| PYRIDINE | | 9 | No data | 0 | 0 | 9 | 0 | 9 |
| SELENIUM COMPOUNDS | | 152 | 220 | 0 | 0 | 372 | 891 | 1263 |
| STYRENE | | 7813 | No data | 0 | 0 | 7813 | 5 | 7818 |
| SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY) | | 621287 | 0 | 0 | 0 | 621287 | 0 | 621287 |
| TERT-BUTYL ALCOHOL | | 13201 | 0 | 0 | 0 | 13201 | 0 | 13201 |
| TETRACHLORO-ETHYLENE | | 57465 | No data | 0 | 0 | 57465 | 8 | 57473 |
| TOLUENE | | 8637 | 21 | 0 | 0 | 8658 | 2041 | 10699 |
| TOLUENE DIISOCYANATE (MIXED ISOMERS) | | 7 | No data | 0 | 0 | 7 | 0 | 7 |
| TOLUENE-2,4-DIISOCYANATE | | 79 | No data | 0 | 0 | 79 | 5 | 84 |

| Chemical | IJC Tracking Number | Total Air Emissions | Surface Water Discharges | Under-ground Injection | Releases to Land | Total Onsite Releases | Total Offsite Releases | Total On- and Offsite Releases |
|---|---|---|---|---|---|---|---|---|
| TRICHLOROETHYLENE | | 5541 | No data | 0 | 0 | 5541 | 5 | 5546 |
| TRIFLURALIN | | 0.87 | No data | 0 | 0 | 0.87 | 0 | 0.87 |
| URETHANE | | 91 | No data | 0 | 0 | 91 | 5 | 96 |
| VANADIUM (EXCEPT WHEN CONTAINED IN AN ALLOY) | | 47 | 170 | 0 | 0 | 217 | 452 | 669 |
| VANADIUM COMPOUNDS | | 325 | 5 | 0 | 0 | 330 | 38107 | 38437 |
| VINYL ACETATE | | 36 | No data | 0 | 0 | 36 | 0 | 36 |
| XYLENE (MIXED ISOMERS) | | 164881 | 15 | 0 | 0 | 164896 | 156 | 165052 |
| ZINC (FUME OR DUST) | | 7693 | No data | 0 | 0 | 7693 | 0 | 7693 |
| ZINC COMPOUNDS | | 2389 | 4555 | 0 | 0 | 6944 | 89206 | 96150 |
| | **Total Non-IJC** | **2883660.12** | **47079** | **0** | **0** | **2930739.1** | **800989** | **3731728.12** |
| | **Total** | **2890993.56** | **49339.98** | **0** | **0** | **2940333.5** | **954126.216** | **3894459.76** |

**Table 3.5-D TRI Facilities Releasing IJC Critical Pollutants Onsite for the Black River AOC**

| IJC Critical Pollutant | Number of Facilities | Facility Name | TRIF ID | City |
|---|---|---|---|---|
| **Dioxin and dioxin-like compounds (PCDDs and PCDFs)** | **2** | | | |
| Lorain County, OH | 2 | AVON LAKE POWER PLANT | 44012FRSTN33570 | AVON LAKE |
| | | ROSS INCINERATION SERVICES INC. | 44044RSSNC36790 | GRAFTON |
| **Aldrin** | **1** | | | |
| Lorain County, OH | 1 | ROSS INCINERATION SERVICES INC. | 44044RSSNC36790 | GRAFTON |
| **Lead and lead compounds** | **9** | | | |
| Lorain County, OH | 9 | AVON LAKE POWER PLANT | 44012FRSTN33570 | AVON LAKE |
| | | BECOTEK MFG. INC. FORMERLY JOHNSON METALL INC. | 44052MRCNC305OB | LORAIN |
| | | FORD MOTOR CO. OHIO ASSEMBLY PLANT | 44012FRDMT650MI | AVON LAKE |
| | | INSERVCO INC. | 44050NSRVC110CO | LAGRANGE |
| | | NATIONAL BRONZE & METALS (OHIO) INC. | 44055NTNLB5311W | LORAIN |
| | | NEW NGC INC. | 44052NWNGC1901H | LORAIN |
| | | REPUBLIC TECHS. INTL. LORAIN PLANT | 44055SSLRN1807E | LORAIN |
| | | ROCK CREEK ALUMINUM INC. | 44035RCKCR320HU | ELYRIA |
| | | ROSS INCINERATION SERVICES INC. | 44044RSSNC36790 | GRAFTON |
| **Mercury and mercury compounds** | **3** | | | |
| Lorain County, OH | 3 | AVON LAKE POWER PLANT | 44012FRSTN33570 | AVON LAKE |
| | | REPUBLIC TECHS. INTL. LORAIN PLANT | 44055SSLRN1807E | LORAIN |
| | | ROSS INCINERATION SERVICES INC. | 44044RSSNC36790 | GRAFTON |
| **Toxaphene** | **1** | | | |
| Lorain County, OH | 1 | ROSS INCINERATION SERVICES INC. | 44044RSSNC36790 | GRAFTON |
| **Hexachlorobenzene** | **1** | | | |
| Lorain County, OH | 1 | ROSS INCINERATION SERVICES INC. | 44044RSSNC36790 | GRAFTON |

**Table 3.5-E NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, Black River AOC**

| Chemical | IJC Tracking Number | Discharge |
|---|---|---|
| Lead Total Recoverable | 8 | 193.16 |
| Lead, Total | 8 | 427.36 |
| Mercury Total Recoverable | 9 | 0.62 |
| Mercury, Total Low Level | 9 | 0.01 |
| | **Total IJC** | 621.15 |
| Cadmium Total Recoverable | | 59.56 |
| Copper Total Recoverable | | 1068 |
| Cyanide, Free-Water Plus Waste Waters | | 1046.27 |
| Cyanide, Total (AS CN) | | 3822.92 |
| Nickel Total Recoverable | | 548.89 |
| Nitrogen, Ammonia Total (AS N) | | 89649.86 |
| Phenolics,Total Recoverable | | 127.16 |
| Phosphorus, Total (AS P) | | 140731.70 |
| Zinc, Total (AS ZN) | **Total Non-IJC** | 237694.20 |
| | **Total** | 238315.35 |

**Table 3.5-F NPDES Facilities Permitted to Discharge IJC Critical Pollutants, Black River AOC**

| IJC Critical Pollutant | Number of Facilities | Facility Name | NPDES | City |
|---|---|---|---|---|
| **Lead** | **3** | | | |
| Lorain County, OH | 3 | City of Amherst | OH0021628 | Amherst |
| | | Oberland Water Env. Protection | OH0020427 | Oberlin |
| | | Republic Engineered Products | OH0001562 | Lorain |
| **Mercury** | **4** | | | |
| Lorain County, OH | **4** | Avon Lake Wastewater Plant | OH0023981 | Avon Lake |
| | | City of Amherst | OH0021628 | Amherst |
| | | City of Lorain | OH0026093 | Lorain |
| | | Oberlin Water Env. Protection | OH0020427 | Oberlin |

## 3.6 MAUMEE RIVER AOC, LUCAS, OTTAWA, AND WOOD COUNTIES, OH

The Maumee River AOC includes all of Lucas County and substantial portions of Ottawa County and Wood County, and approximately 23 miles of the Maumee River, the Maumee Bay, and several creeks and the Ottawa and Toussaint Rivers.

### 3.6.1 Hazardous Waste Sites Relevant to the Maumee River AOC

No hazardous waste sites in Lucas, Ottawa and Wood Counties, OH, have been categorized by ATSDR in public health hazard Categories 1-3.

### 3.6.2 TRI Data for the Maumee River AOC

The TRI onsite chemical releases for Lucas, Ottawa, and Wood counties, OH (combined), summarized in Table 3.6-A, were 16,694,945 pounds, the majority of which were released to land, followed by releases to soil. Very little was released to surface water. Lucas County accounted for 96.4%, Ottawa County accounted for 1.7%, and Wood County accounted for 1.9% of the total onsite releases.

Of the total onsite releases (in pounds), 2,240,392 (13.4%) was released as IJC critical pollutants. The IJC critical pollutants released were: PCBs (to land), PCDDs and PCDFs, (primarily to air and land), lead and lead compounds (2,239,778 pounds, primarily to land), and mercury and mercury compounds (primarily to air and land). Lead releases accounted for >2,000,000 pounds. The facilities that released these pollutants are listed in Table 3.6-B.

The major releases ($\geq$ 500,000 pounds) of non-IJC chemicals were of zinc fume or dust, manganese, copper, and chromium (primarily to land); and methyl ethyl ketone (primarily to air).

### 3.6.3 NPDES Data for the Maumee River AOC

The NPDES permitted discharges for Lucas County, OH are summarized in Table 3.6-C. The total average annual permitted discharges in 2004 were 7,178,272 pounds, the majority of which was ammonia nitrogen. Phosphorus also was permitted to be discharged in substantial amounts (approximately 519,000 pounds).

The IJC critical pollutants lead (approximately 10,700 pounds) and mercury (12 pounds) was permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.6-D.

### 3.6.4 County Demographics and Health Status Data for the Maumee River AOC

The demographic profile, from the 2000 U.S. Census, for vulnerable populations living in the three counties of this AOC is shown in Table 3.6-E.

**Table 3.6-E County Demographic Profiles for the Maumee River AOC**

| Vulnerable population | Lucas County | Ottawa County | Wood County | Total for AOC |
|---|---|---|---|---|
| Children 6 years and younger | 44,499 | 3,160 | 10,068 | 57,727 |
| Females aged 15-44 | 100,352 | 7,746 | 29,708 | 137,806 |
| Adults 65 years and older | 59,441 | 6,710 | 13,315 | 79,466 |

According to the 2000 HRSA community health status reports, health status indicators that compared unfavorably with those of the U.S. and also with the median of the peer counties for the two counties relevant to the Maumee River AOC were as follows (indicators that were above the upper limit of the peer county range are bolded):

Lucas County:
Infant mortality measures (per 1,000 births)
- black infant mortality
- post-neonatal infant mortality

Birth measures (as percent)
- premature births
- unmarried mothers

Death measures (per 100,000 population)
- breast cancer (female)
- colon cancer
- coronary heart disease
- lung cancer

Ottawa County
Infant mortality measures (per 1,000 births**)**
- **infant mortality**
- **white infant mortality**
- neonatal infant mortality
- **post-neonatal infant mortality**

Death measures (per 100,000 population)
- coronary heart disease

Wood County
Infant mortality measures (per 1,000 births**)**
- white infant mortality

Death measures (per 100,000 population)
- breast cancer
- **colon cancer**
- **coronary heart disease**

### 3.6.5 Summary and Conclusions for the Maumee River AOC

#### 3.6.5.1 TRI Data

Onsite TRI releases in Lucas, Ottawa, and Wood Counties (combined) totaled 16,694,945 pounds, the majority of which were released in Lucas County and to land. Of this, about 13.4% (2,240,392 pounds) was IJC critical pollutants, mainly lead. The IJC critical pollutants released were PCBs (to land), PCDDs and PCDFs, (primarily to air and land), lead and lead compounds (primarily to land), and mercury and mercury compounds (to air and land).

#### 3.6.5.2 NPDES Data

The NPDES permitted discharges for Lucas County, OH are summarized in Table 3.6-C. The total average annual permitted discharges in 2004 were 7,178,272 pounds, the majority of which was ammonia nitrogen. Phosphorus also was permitted to be discharged in substantial amounts (approximately 519,000 pounds).

The IJC critical pollutants lead (approximately 10,700 pounds) and mercury (12 pounds) were permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.6-D.

#### 3.6.5.3 County Demographics and Health Status Indicators

Total vulnerable populations were 204,292 for Lucas County, 17,616 for Ottawa County, and 53,091 for Wood County, OH. Lucas County had the largest number of health status indicators of concern (measures that compared unfavorably both with the U.S. and with the median of the peer counties), but none of these were outside the range of the peer county indicators. Ottawa County had fewer indicators of concern, but three of the infant mortality indicators (infant mortality, white infant mortality, and post-neonatal infant mortality) exceeded the upper limit of the peer county range. Wood County had the fewest indicators of concern, but two of the death measures (colon cancer and coronary heart disease) exceeded the upper limit of the peer county range.

#### 3.6.5.4 Beneficial Use Impairments (BUIs)

Of the three health-related BUIs, restrictions on fish and wildlife consumption and drinking water (although this restriction is applicable to some waterways and not all of them, EPA 2006) and beach closings were all listed as impaired at this AOC site. Further information is available at the EPA web site (http://www.epa.gov/glnpo/aoc/).

## Table 3.6-A TRI Releases (in pounds, 2001) for the Maumee River AOC

| Chemical | IJC Tracking Number | Total Air Emissions | Surface Water Discharges | Under-ground Injection | Releases to Land | Total Onsite Releases | Total Offsite Releases | Total On- and Offsite Releases |
|---|---|---|---|---|---|---|---|---|
| POLYCHLORINATED BIPHENYLS | 1 | 0.0000001 | 0 | 0 | 51 | 51.0000001 | 0 | 51.0000001 |
| DIOXIN AND DIOXIN-LIKE COMPOUNDS | 2 | 0.00237699 | 0.0007938 | 0 | 0.004851 | 0.00802179 | 0 | 0.00802179 |
| *(PCDDs and PCDFs)* | 3 | | | | | | | |
| LEAD | 8 | 430.1 | 2.3 | 0 | 2234245.4 | 2234677.8 | 7915.64 | 2242593.44 |
| LEAD COMPOUNDS | | 1345.6 | 355 | 0 | 3400 | 5100.6 | 4837.583 | 9938.183 |
| MERCURY | 9 | 0.1 | 0 | 0 | 30 | 30.1 | 0.791 | 30.891 |
| MERCURY COMPOUNDS | 9 | 254.4 | 5.35 | 0 | 273.1 | 532.85 | 7.2 | 540.05 |
| | **Total IJC** | **2030.202377** | **362.6507938** | **0** | **2237999.505** | **2240392.358** | **12761.214** | **2253153.572** |
| 1,2,4-TRIMETHYLBENZENE | | 30563 | 17 | 0 | 250 | 30830 | 816 | 31646 |
| 1,2-DIBROMOETHANE | | 3005 | 0 | 0 | 0 | 3005 | 0 | 3005 |
| 1,3-BUTADIENE | | 350 | 0 | 0 | 0 | 350 | 0 | 350 |
| 1,4-DICHLOROBENZENE | | 1004 | 0 | 0 | 0 | 1004 | 0 | 1004 |
| ACETALDEHYDE | | 1300 | 0 | 0 | 0 | 1300 | 0 | 1300 |
| ALUMINUM (FUME OR DUST) | | 255 | 0 | 0 | 357000 | 357255 | 250 | 357505 |
| ALUMINUM OXIDE (FIBROUS FORMS) | | 500 | 250 | 0 | 0 | 750 | 5 | 755 |
| AMMONIA | | 121006 | 5100 | 0 | 0 | 126106 | 1220 | 127326 |
| ANTIMONY COMPOUNDS | | 2864 | 5 | 0 | 0 | 2869 | 19260 | 22129 |
| BARIUM | | 10 | 0 | 0 | 121000 | 121010 | 260 | 121270 |
| BARIUM COMPOUNDS | | 2492 | 185 | 0 | 130000 | 132677 | 158454 | 291131 |
| BENFLURALIN | | 385 | 0 | 0 | 0 | 385 | 0 | 385 |
| BENZENE | | 22150 | 19 | 0 | 250 | 22419 | 10 | 22429 |
| BENZO(G,H,I) PERYLENE | | 2.1076608 | 0 | 0 | 0 | 2.1076608 | 3 | 5.1076608 |
| BERYLLIUM | | 241 | 25 | 0 | 54580 | 54846 | 796 | 55642 |
| BROMOCHLORO-DIFLUOROMETHANE | | 1000 | 0 | 0 | 0 | 1000 | 0 | 1000 |
| BROMOTRIFLUOROMETHANE | | 4653 | 0 | 0 | 0 | 4653 | 0 | 4653 |
| BUTYL ACRYLATE | | 218 | 0 | 0 | 0 | 218 | 0 | 218 |
| BUTYRALDEHYDE | | 1200 | 0 | 0 | 0 | 1200 | 0 | 1200 |
| CADMIUM | | 10 | 0 | 0 | 56000 | 56010 | 15 | 56025 |
| CADMIUM COMPOUNDS | | 0 | 1 | 0 | 0 | 1 | 1753 | 1754 |
| CARBON DISULFIDE | | 56851 | 0 | 0 | 0 | 56851 | 0 | 56851 |
| CARBONYL SULFIDE | | 7 | 0 | 0 | 0 | 7 | 0 | 7 |
| CERTAIN GLYCOL ETHERS | | 474072 | 250 | 0 | 750 | 475072 | 15992 | 491064 |
| CHLORODIFLUOROMETHANE | | 2512 | 0 | 0 | 0 | 2512 | 0 | 2512 |
| CHROMIUM | | 506 | 0 | 0 | 523000 | 523506 | 1990 | 525496 |
| CHROMIUM COMPOUNDS(EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION) | | 306 | 51 | 0 | 7100 | 7457 | 7352 | 14809 |
| COPPER | | 810 | 84 | 0 | 605858 | 606752 | 14349 | 621101 |
| COPPER COMPOUNDS | | 22 | 0 | 0 | 0 | 22 | 2050 | 2072 |
| CUMENE | | 502 | 5 | 0 | 250 | 757 | 0 | 757 |
| CYCLOHEXANE | | 13226 | 5 | 0 | 250 | 13481 | 0 | 13481 |
| DI(2-ETHYLHEXYL) PHTHALATE | | 0 | 0 | 0 | 0 | 0 | 250 | 250 |
| DIAZINON | | 5100 | 0 | 0 | 0 | 5100 | 0 | 5100 |
| DICHLORODIFLUOROMETHANE | | 2716 | 0 | 0 | 0 | 2716 | 0 | 2716 |
| DICHLOROMETHANE | | 9718 | 0 | 0 | 0 | 9718 | 0 | 9718 |
| DIETHANOLAMINE | | 500 | 0 | 0 | 0 | 500 | 0 | 500 |
| DIISOCYANATES | | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| ETHYLBENZENE | | 59225 | 18 | 0 | 250 | 59493 | 260 | 59753 |
| ETHYLENE | | 5902 | 0 | 0 | 0 | 5902 | 0 | 5902 |

| Chemical | IJC Tracking Number | Total Air Emissions | Surface Water Discharges | Under-ground Injection | Releases to Land | Total Onsite Releases | Total Offsite Releases | Total On- and Offsite Releases |
|---|---|---|---|---|---|---|---|---|
| ETHYLENE GLYCOL | | 3433 | 250 | 0 | 5 | 3688 | 974 | 4662 |
| FORMALDEHYDE | | 51378 | 0 | 0 | 0 | 51378 | 6753 | 58131 |
| FORMIC ACID | | 1750 | 0 | 0 | 0 | 1750 | 0 | 1750 |
| HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY) | | 53968 | 0 | 0 | 0 | 53968 | 0 | 53968 |
| HYDROGEN FLUORIDE | | 56022 | 0 | 0 | 0 | 56022 | 0 | 56022 |
| MANGANESE | | 330 | 106 | 0 | 2420000 | 2420436 | 3516 | 2423952 |
| MANGANESE COMPOUNDS | | 310 | 6600 | 0 | 13000 | 19910 | 5560 | 25470 |
| METHANOL | | 89737 | 0 | 0 | 0 | 89737 | 2228 | 91965 |
| METHYL ACRYLATE | | 184 | 0 | 0 | 0 | 184 | 0 | 184 |
| METHYL ETHYL KETONE | | 711912 | 250 | 0 | 0 | 712162 | 3700 | 715862 |
| METHYL ISOBUTYL KETONE | | 109170 | 0 | 0 | 0 | 109170 | 0 | 109170 |
| METHYL METHACRYLATE | | 1884 | 0 | 0 | 0 | 1884 | 0 | 1884 |
| METHYL TERT-BUTYL ETHER | | 4075 | 0 | 0 | 0 | 4075 | 0 | 4075 |
| MOLYBDENUM TRIOXIDE | | 0 | 0 | 0 | 0 | 0 | 250 | 250 |
| NAPHTHALENE | | 2121 | 29 | 0 | 0 | 2150 | 52 | 2202 |
| N-BUTYL ALCOHOL | | 362737 | 0 | 0 | 0 | 362737 | 5 | 362742 |
| N-HEXANE | | 38015 | 5 | 0 | 250 | 38270 | 0 | 38270 |
| NICKEL | | 25 | 23 | 0 | 36032 | 36080 | 4361 | 40441 |
| NICKEL COMPOUNDS | | 1606 | 937 | 0 | 71000 | 73543 | 16112 | 89655 |
| NITRATE COMPOUNDS | | 0 | 0 | 0 | 0 | 0 | 32 | 32 |
| NITRIC ACID | | 3521 | 0 | 0 | 0 | 3521 | 0 | 3521 |
| N-METHYL-2-PYRROLIDONE | | 25750 | 5 | 0 | 0 | 25755 | 250 | 26005 |
| OXYDIAZON | | 335 | 0 | 0 | 0 | 335 | 0 | 335 |
| O-XYLENE | | 10 | 0 | 0 | 0 | 10 | 0 | 10 |
| PHENANTHRENE | | 6 | 0 | 0 | 0 | 6 | 33 | 39 |
| PHENOL | | 5601 | 0 | 0 | 0 | 5601 | 10440 | 16041 |
| POLYCHLORINATED ALKANES | | 0 | 0 | 0 | 0 | 0 | 247 | 247 |
| POLYCYCLIC AROMATIC COMPOUNDS | | 809.578738 | 0.005 | 0 | 1.1 | 810.683738 | 10532 | 11342.68374 |
| PROPYLENE | | 13454 | 0 | 0 | 0 | 13454 | 0 | 13454 |
| SODIUM NITRITE | | 5 | 0 | 0 | 0 | 5 | 257 | 262 |
| STYRENE | | 68937 | 0 | 0 | 0 | 68937 | 33292 | 102229 |
| SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY) | | 179950 | 0 | 0 | 0 | 179950 | 0 | 179950 |
| TETRACHLORO-ETHYLENE | | 61961 | 0 | 0 | 0 | 61961 | 0 | 61961 |
| TOLUENE | | 118234 | 269 | 0 | 750 | 119253 | 1867 | 121120 |
| TRICHLOROETHYLENE | | 16420 | 0 | 0 | 0 | 16420 | 250 | 16670 |
| TRICHLOROFLUOROMETHANE | | 165 | 0 | 0 | 0 | 165 | 0 | 165 |
| TRIFLURALIN | | 1110 | 0 | 0 | 0 | 1110 | 0 | 1110 |
| VANADIUM (EXCEPT WHEN CONTAINED IN AN ALLOY) | | 10 | 0 | 0 | 13500 | 13510 | 505 | 14015 |
| VANADIUM COMPOUNDS | | 7103 | 13 | 0 | 330000 | 337116 | 4900 | 342016 |
| XYLENE (MIXED ISOMERS) | | 344110 | 279 | 0 | 750 | 345139 | 280 | 345419 |
| ZINC (FUME OR DUST) | | 1000 | 0 | 0 | 6520000 | 6521000 | 6505 | 6527505 |
| ZINC COMPOUNDS | | 3212 | 5001 | 0 | 7400 | 15613 | 729396 | 745009 |
| | **Total Non-IJC** | **3165544.686** | **19782.005** | **0** | **11269226.1** | **14454552.79** | **1067382** | **15521934.79** |
| | **Total** | **3167574.889** | **20144.65579** | **0** | **13507225.6** | **16694945.15** | **1080143.214** | **17775088.36** |

**Table 3.6-B TRI Facilities Releasing IJC Critical Pollutants Onsite for the Maumee River AOC**

| IJC Critical Pollutant | Number of Facilities | Facility Name | TRIF ID | City |
|---|---|---|---|---|
| **Polychlorinated biphenyls** | **1** | | | |
| Lucas County, OH | 1 | ENVIROSAFE SERVICES OF OHIO INC. | 43616NVRSF876OT | OREGON |
| **Dioxin and dioxin-like compounds *(PCDDs and PCDFs)*** | **3** | | | |
| Lucas County, OH | 3 | BAYSHORE PLANT | 43616FRSTN4701B | OREGON |
| | | BP AMERICA INC. TOLEDO REFY. | 43616SHLCM4001C | OREGON |
| | | ENVIROSAFE SERVICES OF OHIO INC. | 43616NVRSF876OT | OREGON |
| **Lead and lead compounds** | **15** | | | |
| Lucas County, OH | 12 | BAYSHORE PLANT | 43616FRSTN4701B | OREGON |
| | | BP AMERICA INC. TOLEDO REFY. | 43616SHLCM4001C | OREGON |
| | | CREATIVE PRODS. INC. | 43528CRTVP1430K | HOLLAND |
| | | ENVIROSAFE SERVICES OF OHIO INC. | 43616NVRSF876OT | OREGON |
| | | GM POWERTRAIN TOLEDO TRANSMISSION | 43692GNRLM1455W | TOLEDO |
| | | JOHNS MANVILLE | 43566MNVLL6050R | WATERVILLE |
| | | JOHNSON CONTROLS INC. BATTERY GROUP | 43528JHNSN10300 | HOLLAND |
| | | LIBBEY GLASS INC. | 43611LBBYG940AS | TOLEDO |
| | | POWERLAB INC. | 43537PWRLB370WD | MAUMEE |
| | | SEM-COM CO. INC. | 43607SMCMC1040N | TOLEDO |
| | | SUNOCO INC. (R&M) | 43616SNRFN1819W | OREGON |
| | | TEXTILEATHER CORP. | 43608DVRST3729T | TOLEDO |
| Ottawa County, OH | 2 | GRAYMONT DOLIME OH INC. | 43430GRYMN21880 | GENOA |
| Wood County, OH | 1 | TECHNEGLAS INC. | 43551NGTVP25875 | PERRYSBURG |
| **Mercury and mercury compounds** | **4** | | | |
| Lucas County, OH | 2 | BAYSHORE PLANT | 43616FRSTN4701B | OREGON |
| | | BP AMERICA INC. TOLEDO REFY. | 43616SHLCM4001C | OREGON |
| Ottawa County, OH | 2 | GRAYMONT DOLIME OH INC. | 43430GRYMN21880 | GENOA |
| | | UNITED STATES GYPSUM CO. | 43433NTDSTGYPSU | GYPSUM |
| | | | | |

**Table 3.6-C NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, Maumee River AOC**

| Chemical | IJC Tracking Number | Discharge |
|---|---|---|
| LEAD TOTAL RECOVERABLE | 8 | 19.32 |
| LEAD, TOTAL (AS PB) | 8 | 10704.90 |
| MERCURY, TOTAL (AS HG) | 9 | 12.07 |
| | **Total IJC** | **10736.29** |
| BERYLLIUM, TOTAL RECOVERABLE (AS BE) | | 5955.71 |
| CADMIUM TOTAL RECOVERABLE | | 2301.80 |
| CADMIUM, TOTAL (AS CD) | | 1666.16 |
| CHROMIUM, HEXAVALENT (AS CR) | | 1835.00 |
| CHROMIUM, HEXAVALENT DISSOLVED (AS CR) | | 7629.74 |
| CHROMIUM, TOTAL (AS CR) | | 16581.29 |
| COPPER TOTAL RECOVERABLE | | 17376.17 |
| COPPER, TOTAL (AS CU) | | 13883.88 |
| CYANIDE, FREE-WATER PLUS WASTEWATERS | | 660.04 |
| NICKEL TOTAL RECOVERABLE | | 11267.55 |
| NICKEL, TOTAL (AS NI) | | 4.02 |
| NITROGEN, AMMONIA TOTAL (AS N) | | 6556864.47 |
| PHENOLICS, TOTAL RECOVERABLE | | 5376.23 |
| PHOSPHORUS, TOTAL (AS P) | | 518999.45 |
| SILVER TOTAL RECOVERABLE | | 1115.81 |
| SILVER, TOTAL (AS AG) | | 869.21 |
| SULFIDE, TOTAL (AS S) | | 5142.83 |
| ZINC, TOTAL (AS ZN) | | 6.04 |
| | **Total Non-IJC** | **7167535.40** |
| | **Total** | **7178271.69** |

**Table 3.6-D NPDES Facilities Permitted to Discharge IJC Critical Pollutants**
**Maumee River AOC**

| IJC Critical Pollutant | Number of Facilities | Facility Name | NPDES | City |
|---|---|---|---|---|
| **Lead** | **3** | | | |
| Lucas County, OH | 1 | CITY OF TOLEDO | OH0027740 | TOLEDO |
| **Mercury** | **1** | | | |
| Lucas County, OH | 1 | CITY OF TOLEDO | OH0027740 | TOLEDO |
| | | | | |
| | | | | |

## 3.7 RIVER RAISIN AOC, MONROE COUNTY, MI

The River Raisin AOC, located in the southeastern part of Michigan's lower peninsula, is defined as the lower (2.6 mile) portion of the River Raisin, downstream from Dam #6 at Winchester Bridge in the City of Monroe, and extending one-half mile out into Lake Erie along the near shore, both north and south, for one mile.

### 3.7.1 Hazardous Waste Sites Relevant to the River Raisin AOC

ATSDR has evaluated the data for two hazardous waste sites in Monroe County, MI, and reached conclusions regarding the public health threat posed by these sites. These conclusions, along with information regarding the type and location of the site, and the date and type of assessment document, are summarized in Table 3.7-A.

**Table 3.7-A Hazardous Waste Sites in Monroe County, MI**

| Site Name, County | Public Health Hazard Category | EPA NPL Status | Site ID | City |
|---|---|---|---|---|
| Consolidated Packaging Corp. | 3 (1995 HC) | Non NPL | MID980999882 | Monroe |
| Novaco Industries | 5 (1988 HA) | Deleted Post SARA | MID084566900 | Temperance |

3 = Indeterminate Public Health Hazard, 5 = No Public Health Hazard
HA = Public Health Assessment, HC = Health Consultation

For hazardous waste sites in Monroe County MI that at any time had Public Health Hazard Categories of 1-3 (only one site—Consolidated Packaging Corp.), the number of contaminant records in HazDat that exceeded health based-screening values was 107, as shown in Table 3.7-B. Most of the records were for the soil media group; water had the next highest number of records.

The IJC Great Lakes critical pollutants accounted for 20 of these records (19%), with the majority for the biota and soil media groups. The IJC critical pollutants that have been found at Monroe County, MI hazardous waste sites at concentrations exceeding health-based screening values are: PCBs, B(a)P, DDT and metabolites, dieldrin, lead, mercury, and hexachlorobenzene. Details are provided in Table 3.7-C.

Further evaluation of the data for the Consolidated Packaging Corp. site was conducted by ATSDR in the health consultation listed in Table 3.7-A. This evaluation is discussed in the following subsection.

#### 3.7.1.1 Consolidated Packaging Corp.

This 97-acre site, located on the east side of the city of Monroe, Monroe County, MI, was formerly occupied by a paper and paperboard plant that was in operation from 1898 through 1978. The plant structures have been demolished. The site includes seven lagoons formerly used for waste water disposal, storage, and treatment; these lagoons constitute a large proportion of the site. Overflow from the lagoons formerly flowed through drainage ditches into the nearby River Raisin. The site was originally wetlands, which were filled with various materials, including commercial and industrial wastes, prior to construction of the plant. The site is bordered by a waste water treatment plant, a closed industrial landfill, and a residential area. The

Raisin River flows east-southeast less than 200 feet north of the site, emptying into Lake Erie approximately 2 miles from the site. Another industrial facility is located on the opposite bank of the river, and two toxic waste sites associated with PCB and heavy metal contaminated sediments are slightly downstream on the opposite bank of the river. Information regarding this site is taken from the 1995 ATSDR health consultation.

**Category of Public Health Hazard:** This site was categorized as an *Indeterminate Public Health Hazard* (Category 3) because of the potential threat to human health from exposure to contaminants and incomplete monitoring data.

**Contaminants of Concern in Completed Exposure Pathways:** None identified. There were no data regarding concentrations of contaminants in surface soil; the shallowest soil samples were considerably deeper than the 3-inch depth recommended by ATSDR. Concentrations of many contaminants, including the IJC critical pollutants PCBs, B(a)P, lead, and mercury in soil and sediment exceeded health-based screening values, but further assessment indicated that trespassers were not likely to be exposed at levels of potential human health risk. The concentrations of PAHs including B(a)P were considered comparable to background concentrations in urban soil. The sediment in the lagoons is contaminated with the IJC critical pollutant PCBs. Children reportedly fished in the lagoons before they were fenced; fish and turtles have been seen in the drainage ditch. No data were available on contaminant concentrations in fish from the lagoons and ditch, but fish taken from the River Raisin near the site contained elevated concentrations of PCBs. The Consolidated Packaging Corporation is one of many possible sources for the PCB contamination of the fish. Groundwater at the site contains various contaminants, including PCBs, at concentrations above health-based screening values, but there are no producing wells. Groundwater flow, however, is towards the northeast, and is thought to discharge into the River Raisin.

The Visteon plant located adjacent to the Raisin River has been identified as a source of PCBs in the river, and that PCB wastes are now stored in an onsite disposal cell as reported by EPA (June 2004). EPA also reports that bacterial levels in the waters have led to beach closings.

**Demographics:** Not reported, but a residential area is adjacent to the site.

**Public Health Outcome Data:** Not reported.

**Conclusions:** This site may have contributed and may continue to contribute to the environmental burden of the IJC critical pollutants PCBs, lead, and mercury, and possibly B(a)P. Human onsite exposure does not appear to be occurring at levels of concern, but data for surface soil are not available, so there is uncertainty regarding this source of exposure. The site, however, has not been remediated, and PCBs have been detected at above health-based screening values in onsite groundwater that is thought to discharge to the River Raisin.

### 3.7.2 TRI Data for the River Raisin AOC

The TRI onsite chemical releases for Monroe County, MI are summarized in Table 3.7-C. Total onsite releases in 2001 were 16,700,032 pounds, the majority of which were released to air, followed by releases to soil. Very little was released to surface water.

Of the total onsite releases, 66,177 pounds (0.4%) were accounted for IJC critical pollutants. The IJC critical pollutants released were PCDDs and PCDFs (to air), lead and lead compounds (primarily to land), mercury and mercury compounds (to air and land), and hexachlorobenzene (to air). The facilities that released these pollutants are listed in Table 3.7-D.

The major onsite releases (≥ 500,000 pounds) of non-IJC chemicals were of hydrochloric acid, ethylene, sulfuric acid, and hydrogen fluoride (to air); and barium compounds (primarily to land).

### 3.7.3 NPDES Data for the River Raisin AOC

The NPDES permitted discharges for Monroe County, MI are summarized in Table 3.7-E. The total average annual permitted discharges in 2004 were 1,008,051 pounds, the majority of which was ammonia nitrogen (approximately 783,000 pounds), and also phosphorus and strontium (slightly more than 100,000 pounds each). No IJC critical pollutants were the subject of permitted (quantity average limit) discharge amounts.

### 3.7.4 County Demographics and Health Status Data for the River Raisin AOC

The demographic profile, from the 2000 U.S. Census, for vulnerable populations living in Monroe County MI is as follows:

| | |
|---|---|
| Children 6 years and younger | 13,834 |
| Females aged 15-44 | 31,020 |
| Adults 65 and older | 16,222 |

According to the 2000 HRSA community health status reports, health status indicators that compared unfavorably with those of the U.S. and also with the median of the peer counties for Monroe County MI were as follows (indicators that were above the upper limit of the peer county range are bolded):

Infant mortality (per 1,000 births)

- post-neonatal infant mortality

Death measures (per 100,000 population)

- colon cancer
- **coronary heart disease**
- lung cancer
- stroke

### 3.7.5 Summary and Conclusions for the River Raisin AOC, Monroe County, MI

#### 3.7.5.1 Hazardous Waste Sites

Only one hazardous waste site, the Consolidated Packaging Corporation, in Monroe County, MI has been assessed by ATSDR with a Public Health Hazard category in the range of 1-3. The soil and sediment at this site is contaminated with the IJC critical pollutants PCBs, B(a)P, lead, and mercury at concentrations that exceeded health-based screening values. Onsite groundwater,

contaminated with PCBs, may discharge into the River Raisin. The site is considered an Indeterminate Public Health Hazard (Category 3) because monitoring data are inadequate to determine if chemicals in completed exposure pathways pose a public health hazard.

**Issues for Follow-Up**

Consolidated Packaging Corporation: In its 2002 health consultation, ATSDR recommended additional monitoring to determine concentrations of contaminants in surface soil. Additional issues for follow-up include determining whether groundwater contaminated with PCBs actually is discharging to the River Raisin.

### 3.7.5.2 TRI Data

Onsite TRI releases in Monroe County MI totaled 16,700,032 pounds, the majority of which were released to air, followed by releases to soil. Releases to water were minimal. Of this, only 66,177 pounds 0.4% was IJC critical pollutants. The IJC critical pollutants were PCDDs and PCDFs (released to air), lead and lead compounds (primarily to land), mercury and mercury compounds (to air and land), and hexachlorobenzene (to air). The major onsite releases (≥500,000 pounds) of non-IJC chemicals were of hydrochloric acid, ethylene, sulfuric acid, and hydrogen fluoride (to air); and barium compounds (primarily to land).

### 3.7.5.3 NPDES Data

The NPDES permitted discharges for Monroe County, MI are summarized in Table 3.7-E. The total average annual permitted discharges in 2004 were 1,008,051 pounds, the majority of which was ammonia nitrogen (approximately 783,000 pounds), and also phosphorus and strontium (slightly more than 100,000 pounds each). No IJC critical pollutants were the subject of permitted (quantity average limit) discharge amounts.

### 3.7.5.4 County Demographics and Health Status Indicators

Vulnerable populations for Monroe County, MI, totaled 61,076. A few Monroe County health status indicators compared unfavorably with both U.S. indicators and with the median of peer county indicators. These included post-neonatal infant mortality, and deaths from various cancers (colon and lung), coronary heart disease, and stroke. Coronary heart disease was the only indicator that was higher than the upper limit of the range for peer counties.

### 3.7.5.5 Beneficial Use Impairments (BUIs)

Of the three health-related BUIs, restrictions on fish and wildlife consumption and beach closings were the two BUIs listed as impaired at this AOC site. Further information is available at the EPA web site (http://www.epa.gov/glnpo/aoc/).

**Table 3.7-B Waste Site Contaminants that Exceeded Health-Based Screening Values**
**River Raisin AOC**

| | | | Number of Records | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **CAS No.** | **Chemical Name** | **IJC Tracking Number** | **Air** | **Biota** | **Human Material** | **Other Media** | **Soil** | **Water** | **Total** |
| 001336-36-3 | POLYCHLORINATED BIPHENYLS | 1 | | 1 | | | 2 | 1 | 4 |
| 000050-32-8 | BENZO(A)PYRENE | 4 | | | | | 2 | | 2 |
| 000072-54-8 | DDD, P,P'- | 5 | | 1 | | | | | 1 |
| 000072-55-9 | DDE, P,P'- | 5 | | 1 | | | | | 1 |
| 000050-29-3 | DDT, P,P'- | 5 | | 1 | | | | | 1 |
| 000060-57-1 | DIELDRIN | 6 | | 1 | | | | | 1 |
| 007439-92-1 | LEAD | 8 | | 1 | | | 2 | 2 | 5 |
| 007439-97-6 | MERCURY | 9 | | 1 | | | 2 | 1 | 4 |
| 000118-74-1 | HEXACHLOROBENZENE | 11 | | 1 | | | | | 1 |
| | | **Total IJC** | **0** | **8** | **0** | **0** | **8** | **4** | **20** |
| 000071-55-6 | 1,1,1-TRICHLOROETHANE | | | | | | 1 | | 1 |
| 000075-34-3 | 1,1-DICHLOROETHANE | | | | | | 1 | 1 | 2 |
| 000106-46-7 | 1,4-DICHLOROBENZENE | | | | | | 1 | | 1 |
| 000091-57-6 | 2-METHYLNAPHTHALENE | | | | | | 2 | 1 | 3 |
| 000208-96-8 | ACENAPHTHYLENE | | | | | | 1 | | 1 |
| 007440-36-0 | ANTIMONY | | | | | | 1 | | 1 |
| 007440-38-2 | ARSENIC | | | | | | 2 | 1 | 3 |
| 007440-39-3 | BARIUM | | | | | | 2 | 2 | 4 |
| 000071-43-2 | BENZENE | | | | | | | 1 | 1 |
| 000056-55-3 | BENZO(A)ANTHRACENE | | | | | | 2 | | 2 |
| 000205-99-2 | BENZO(B)FLUORANTHENE | | | | | | 2 | | 2 |
| 000191-24-2 | BENZO(GHI)PERYLENE | | | | | | 2 | | 2 |
| 000207-08-9 | BENZO(K)FLUORANTHENE | | | | | | 2 | | 2 |
| 000100-51-6 | BENZYL ALCOHOL | | | | | | | 1 | 1 |
| 007440-41-7 | BERYLLIUM | | | | | | 2 | 1 | 3 |
| 007440-43-9 | CADMIUM | | | 1 | | | 2 | 1 | 4 |
| 000057-74-9 | CHLORDANE | | | 1 | | | | | 1 |
| 007440-47-3 | CHROMIUM | | | 1 | | | 2 | | 3 |
| 000218-01-9 | CHRYSENE | | | | | | 2 | | 2 |
| 007440-48-4 | COBALT | | | | | | 2 | 1 | 3 |
| 007440-50-8 | COPPER | | | 1 | | | 2 | | 3 |
| 000106-44-5 | CRESOL, PARA- | | | | | | 2 | | 2 |
| 000117-81-7 | DI(2-ETHYLHEXYL)PHTHALATE | | | | | | 2 | | 2 |
| 000053-70-3 | DIBENZO(A,H)ANTHRACENE | | | | | | 2 | | 2 |
| 000117-84-0 | DI-N-OCTYL PHTHALATE | | | | | | 1 | | 1 |
| HZ0400-04-T | DIOXINS/FURANS, UNSPECIFIED | | | | | | 2 | | 2 |
| 000076-44-8 | HEPTACHLOR | | | | | | | 1 | 1 |
| 001024-57-3 | HEPTACHLOR EPOXIDE | | | 1 | | | | | 1 |
| 000193-39-5 | INDENO(1,2,3-CD)PYRENE | | | | | | 2 | | 2 |
| 007439-96-5 | MANGANESE | | | | | | 2 | 2 | 4 |
| 000091-20-3 | NAPHTHALENE | | | | | | 1 | 1 | 2 |
| 007440-02-0 | NICKEL | | | 1 | | | 2 | 2 | 5 |
| 000086-30-6 | N-NITROSODIPHENYLAMINE | | | | | | | 1 | 1 |
| 000087-86-5 | PENTACHLOROPHENOL | | | | | | 1 | | 1 |
| 000085-01-8 | PHENANTHRENE | | | | | | 2 | 1 | 3 |
| 007782-49-2 | SELENIUM | | | | | | 2 | 1 | 3 |
| 000079-01-6 | TRICHLOROETHYLENE | | | | | | | 1 | 1 |
| 007440-62-2 | VANADIUM | | | | | | 2 | | 2 |
| 007440-66-6 | ZINC | | | 1 | | | 2 | 2 | 5 |
| 000132-64-9 | DIBENZOFURAN | | | | | | 1 | 1 | 2 |
| | | **Total Non-IJC** | **0** | **7** | **0** | **0** | **57** | **23** | **87** |
| | | **Total** | **0** | **15** | **0** | **0** | **65** | **27** | **107** |

**Table 3.7-C TRI Releases (in pounds, 2001) for the River Raisin AOC**

| Chemical | IJC Tracking Number | Total Air Emissions | Surface Water Discharges | Under-ground Injection | Releases to Land | Total Onsite Releases | Total Offsite Releases | Total On- and Offsite Releases |
|---|---|---|---|---|---|---|---|---|
| DIOXIN AND DIOXIN-LIKE COMPOUNDS | 2 | 0.007667447 | No data | 0 | 0 | 0.007667447 | 0 | 0.007667447 |
| *(PCDDs and PCDFs)* | 3 | | | | | | | |
| LEAD | 8 | 3.79 | No data | 0 | 1160.5 | 1164.29 | 1 | 1165.29 |
| LEAD COMPOUNDS | 8 | 965 | 161 | 0 | 62622 | 63748 | 5911.75 | 69659.75 |
| MERCURY | 9 | 58 | No data | 0 | 0 | 58 | 0 | 58 |
| MERCURY COMPOUNDS | 9 | 879.6 | 1 | 0 | 313 | 1193.6 | 0.1 | 1193.7 |
| HEXACHLOROBENZENE | 11 | 13.6 | 0 | 0 | 0 | 13.6 | 0 | 13.6 |
| | **Total IJC** | **1919.997667** | **162** | **0** | **64095.5** | **66177.49767** | **5912.85** | **72090.34767** |
| 1,2,4-TRIMETHYLBENZENE | | 24250 | No data | 0 | 0 | 24250 | 0 | 24250 |
| 1,3-BUTADIENE | | 90717 | No data | 0 | 0 | 90717 | 0 | 90717 |
| AMMONIA | | 89097 | 980 | 0 | 0 | 90077 | 0 | 90077 |
| ANTIMONY COMPOUNDS | | 250 | No data | 0 | 0 | 250 | 500 | 750 |
| ARSENIC COMPOUNDS | | 406 | 1200 | 0 | 40000 | 41606 | 0 | 41606 |
| BARIUM COMPOUNDS | | 8937 | 8800 | 0 | 1750000 | 1767737 | 0 | 1767737 |
| BENZENE | | 137898 | No data | 0 | 0 | 137898 | 0 | 137898 |
| BENZO(G,H,I) PERYLENE | | 3136.2 | 0 | 0 | 0 | 3136.2 | 0 | 3136.2 |
| BERYLLIUM COMPOUNDS | | 48 | 0 | 0 | 12000 | 12048 | 0 | 12048 |
| CERTAIN GLYCOL ETHERS | | 47598 | No data | 0 | 0 | 47598 | 0 | 47598 |
| CHROMIUM | | 2661 | No data | 0 | 35 | 2696 | 458 | 3154 |
| CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION) | | 2478 | 2320 | 0 | 78800 | 83598 | 12842 | 96440 |
| COBALT COMPOUNDS | | 250 | 49 | 0 | 28000 | 28299 | 0 | 28299 |
| COPPER COMPOUNDS | | 2222 | 3022 | 0 | 353500 | 358744 | 3038 | 361782 |
| DIISOCYANATES | | 41 | No data | 0 | 0 | 41 | 0 | 41 |
| ETHYLBENZENE | | 53100 | No data | 0 | 0 | 53100 | 0 | 53100 |
| ETHYLENE | | 1524027 | No data | 0 | 0 | 1524027 | 0 | 1524027 |
| HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY) | | 9901000 | No data | 0 | 0 | 9901000 | 0 | 9901000 |
| HYDROGEN FLUORIDE | | 551000 | No data | 0 | 0 | 551000 | 0 | 551000 |
| MANGANESE | | 245 | No data | 0 | 461 | 706 | 53 | 759 |
| MANGANESE COMPOUNDS | | 3279 | 6729 | 0 | 86000 | 96008 | 0 | 96008 |
| METHANOL | | 27300 | No data | 0 | 0 | 27300 | 0 | 27300 |
| METHYL ETHYL KETONE | | 24250 | No data | 0 | 0 | 24250 | 0 | 24250 |
| METHYL ISOBUTYL KETONE | | 17250 | No data | 0 | 0 | 17250 | 0 | 17250 |
| NAPHTHALENE | | 35053 | No data | 0 | 0 | 35053 | 0 | 35053 |
| N-BUTYL ALCOHOL | | 30250 | No data | 0 | 0 | 30250 | 0 | 30250 |
| NICKEL | | 635 | No data | 0 | 35 | 670 | 1901 | 2571 |
| NICKEL COMPOUNDS | | 1019 | 863 | 0 | 59000 | 60882 | 6 | 60888 |
| POLYCYCLIC AROMATIC COMPOUNDS | | 15693.5 | 0 | 0 | 39 | 15732.5 | 0 | 15732.5 |
| SELENIUM COMPOUNDS | | 9000 | 2800 | 0 | 6900 | 18700 | 0 | 18700 |
| SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY) | | 777000 | No data | 0 | 0 | 777000 | 0 | 777000 |
| TOLUENE | | 102089 | No data | 0 | 0 | 102089 | 0 | 102089 |
| TRICHLOROETHYLENE | | 15000 | No data | 0 | 0 | 15000 | 0 | 15000 |
| VANADIUM COMPOUNDS | | 6084 | 4200 | 0 | 175300 | 185584 | 0 | 185584 |
| XYLENE (MIXED ISOMERS) | | 367313 | No data | 0 | 0 | 367313 | 0 | 367313 |
| ZINC (FUME OR DUST) | | 121 | No data | 0 | 597 | 718 | 0 | 718 |
| ZINC COMPOUNDS | | 6994 | 4528 | 0 | 130005 | 141527 | 72772 | 214299 |
| | **Total Non-IJC** | **13877691.7** | **35491** | **0** | **2720672** | **16633854.7** | **91570** | **16725424.7** |
| | **Total** | **13879611.7** | **35653** | **0** | **2784767.5** | **16700032.2** | **97482.85** | **16797515.05** |

**Table 3.7-D TRI Facilities Releasing IJC Critical Pollutants Onsite for the River Raisin AOC**

| IJC Critical Pollutant | Number of Facilities | Facility Name | TRIF ID | City |
|---|---|---|---|---|
| **Dioxin and dioxin-like compounds *(PCDDs and PCDFs)*** | **3** | | | |
| Monroe County, MI | 3 | DETROIT EDISON MONROE POWER PLANT | 48161DTRTD3500E | MONROE |
| | | HOLCIM (US) INC. - DUNDEE PLANT | 48131DNDCM6211N | DUNDEE |
| | | J. R. WHITING GENERATING PLANT | 48157JRWHT4525E | ERIE |
| **Lead and lead compounds** | **6** | | | |
| Monroe County, MI | 6 | DETROIT EDISON FERMI 2 PLANT | 48166DTRTD6400N | NEWPORT |
| | | DETROIT EDISON MONROE POWER PLANT | 48161DTRTD3500E | MONROE |
| | | DIAMOND ELECTRIC MFG. CORP. | 48131DMNDL110RE | DUNDEE |
| | | HOLCIM (US) INC. - DUNDEE PLANT | 48131DNDCM6211N | DUNDEE |
| | | J. R. WHITING GENERATING PLANT | 48157JRWHT4525E | ERIE |
| | | NORTH STAR STEEL CO. MICHIGAN DIV. | 48161NRTHS3000E | MONROE |
| **Mercury and mercury compounds** | **4** | | | |
| Monroe County, MI | 4 | DETROIT EDISON MONROE POWER PLANT | 48161DTRTD3500E | MONROE |
| | | HOLCIM (US) INC. - DUNDEE PLANT | 48131DNDCM6211N | DUNDEE |
| | | J. R. WHITING GENERATING PLANT | 48157JRWHT4525E | ERIE |
| | | NORTH STAR STEEL CO. MICHIGAN DIV. | 48161NRTHS3000E | MONROE |
| **Hexachlorobenzene** | **1** | | | |
| Monroe County, MI | 1 | DETROIT EDISON MONROE POWER PLANT | 48161DTRTD3500E | MONROE |

**Table 3.7-E NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, River Raisin AOC**

| Chemical | IJC Tracking Number | Discharge |
|---|---|---|
| | **Total IJC** | **0** |
| BARIUM, TOTAL (AS BA) | | 401.50 |
| COPPER, TOTAL (AS CU) | | 390.55 |
| HYDROGEN SULFIDE | | 1.10 |
| NITROGEN, AMMONIA TOTAL (AS N) | | 783477.25 |
| PHOSPHORUS, TOTAL (AS P) | | 108458.66 |
| SELENIUM, TOTAL (AS SE) | | 1416.20 |
| SILVER, TOTAL (AS AG) | | 80.30 |
| STRONTIUM,TOTAL (AS SR) | | 113150 |
| THALLIUM, TOTAL (AS TL) | | 675.25 |
| | **Total Non-IJC** | **1008050.81** |
| | **Total** | **1008050.81** |

## 3.8 ROUGE RIVER AOC, WAYNE AND OAKLAND COUNTIES, MI

The Rouge River has four main branches primarily flowing through Wayne and Oakland Counties. It discharges into the Detroit River near the south end of Zug Island. Oakland County is relevant not only to the Rouge River AOC, but also to the Clinton River AOC, discussed in Section 3.9 of this document.

### 3.8.1 Hazardous Waste Sites Relevant to the Rouge River AOC

ATSDR has evaluated the data for hazardous waste sites in Wayne and Oakland Counties, MI, and reached conclusions regarding the public health threat posed by these sites. These conclusions, along with information regarding the type and location of the site, and the date and type of assessment document, are summarized in Tables 3.8-A and 3.8-B, for sites that had public heath hazard Categories of 1 – 3 at some point during their assessment history. There are 16 sites altogether: 10 in Wayne County and 6 in Oakland County.

**Table 3.8-A Hazardous Waste Sites in Wayne County, MI**

| Site Name | Public Health Hazard Category | EPA NPL Status | Site ID | City |
|---|---|---|---|---|
| Carter Industrials, Inc. | 2 (1992 HA) | Deleted Post SARA | MID980274179 | Detroit |
| Ford Motor Co. Allen Park Clay Mine | 3 (1994 HA) | Non NPL | MID980568711 | Allen Park |
| Gratoit Trailer Park | 2 (1999 HC) | --- | MISFN0507941 | Detroit |
| Joy Road Dump/Holiday Park/Holiday Nature Preserve | 2 (2000 HC) | --- | MISFN0507950 | Westland |
| Lower Ecorse Creek Dump | 1 (1993 HV)<br>4 (1995 HA) | Final | MID985574227 | Wyandotte |
| Master Metals Inc. #2 | 2 (1997 HC)<br>5 (2005) | Non-NPL | MID039108824 | Detroit |
| Packard Plant | 2 (1998 HC) | Non-NPL | MIR000037689 | Detroit |
| Proposed Beard Street School | 3 (2001 HC)<br>5 (2002 HC) | --- | MIXCRA704000 | Detroit |
| Wholesale Russell/Mack | 2 (1997 HC) | Non-NPL | MIXCRA327000, MISFN0507878 | |
| Old World Trade Center | 2 (1997 HC) | Non-NPL | MI0001094465 | Detroit |

1 = Urgent Public Health Hazard, 2 = Public Health Hazard, 3 = Indeterminate Public Health Hazard, 4 = No Apparent Public Health Hazard, 5 = No Public Health Hazard
HA = Public Health Assessment, HC = Health Consultation, HV = Health Advisory

**Table 3.8-B Hazardous Waste Sites in Oakland County, MI**

| Site Name | Public Health Hazard Category | EPA NPL Status | Site ID | City |
|---|---|---|---|---|
| Cemetery Dump | 3 (1988 HA)<br>4 (1992 HA) | Deleted Post SARA | MID980794663 | Rose Center |
| Continental Aluminum Corp. | 3 (2003 HC) | Non NPL | MI0001941699 | New Hudson |
| Hi-Mill Manufacturing Co. | 3 (1991 HA) | Final | MID005341714 | Highland |
| J & L Landfill | 3 (1989 HA)<br>4 (1993 HA)<br>5 (n.d. SR) | Final | MID980609440 | Rochester Hills |
| Rose Township Dump | 3 (1988 HA) | Final | MID980499842 | Rose Township |
| Springfield Township Dump | 3 (1988 HA) | Final | MID980499966 | Davisburg |

3 = Indeterminate Public Health Hazard, 4 = No Apparent Public Health Hazard, 5 = No Public Health Hazard
HA = Public Health Assessment, HC = Health Consultation, SR = Site Review and Update n.d. = no date provided

For hazardous waste sites in Wayne and Oakland Counties, MI that at any time had Public Health Hazard Categories of 1-3, the number of contaminant records in HazDat that exceeded health based-screening values was 1,582, as shown in Table 3.8-C. Most of the records were for the soil media group; the water media group had the next highest number of records.

The IJC Great Lakes critical pollutants accounted for 238 of these records, with the majority for the soil media group. The IJC critical pollutants that have been found at Wayne and Oakland County, MI hazardous waste sites at concentrations exceeding health-based screening values are: PCBs, PCDDs, B(a)P, DDT and metabolites, aldrin/dieldrin, lead, mercury, and hexachlorobenzene. Details are provided in Table 3.8-D.

Further evaluation of the data for the sites with Public Health Hazard Categories of 1-3 was conducted by ATSDR in the Public Health Assessment and other health-related documents listed in the table. These evaluations are discussed in the following subsections, in the same order as in Tables 3.8-A and 3.8-B, with the Wayne County sites discussed first, followed by the Oakland County sites, which are relevant to Clinton River AOC as well as to the Rouge River AOC.

### 3.8.1.1 Carter Industrials, Inc.

This site is a former scrap metal yard in Detroit (Wayne County), which was found to be extensively contaminated with PCBs (from electrical capacitors and transformers salvaged at the site) and metals, including lead. The sewers that drain the site contain PCBs in their sediments, and drain into the Detroit River. As of 1992, PCB-contaminated surface soils from nearby properties had been piled on the Carter site, and the piles of waste had been covered. The site was fenced. The transformers and barrels containing PCBs were removed. Surface water runoff collection and activated carbon treatment had been installed. According to ATSDR, EPA estimated that the total amount of PCBs in the soils on the site could be nearly 17 tons. Information regarding this site is taken from the 1992 ATSDR preliminary public health assessment and the 2003 EPA NPL fact sheet.

**Category of Public Health Hazard:** This site was categorized as a *Public Health Hazard* (Category 2) because of the presence of hazardous substances on the site and the difficulty of maintaining site security.

**Contaminants of Concern in Completed Exposure Pathways:** Inhalation of PCB-contaminated fugitive dusts was considered a principal route of exposure because PCBs were found in particulates in rain gutters of nearby homes. However, the sampling appears to have been performed before the removal of PCB-contaminated soil from yards to the site, and the covering of the mounds of soil. PCBs also were found in the storm sewers that drain the site and empty into the Detroit River. The greatest concern, however, was for direct exposure of trespassers to the PBC-contaminated soil onsite. Nevertheless, blood samples from the surrounding residents, taken before any remediation of the site and surrounding area, did not indicate that exposures exceeded those of the general population.

**Demographics:** Demographic profile, from the 2000 U.S. Census, for vulnerable populations living within one mile of this site:

| | |
|---|---|
| Children 6 years and younger | 1,444 |
| Females aged 15-44 | 3,199 |
| Adults 65 and older | 1,734 |

**Public Health Outcome Data:** ATSDR noted that an evaluation of health outcome data will be conducted in future public health assessments of the site. The results of a 1986 Michigan Department of Public Health study of 235 blood samples from people living in the residential area surrounding the site showed no remarkably high PCB concentrations compared with the general population. Blood lead, checked in 60 subjects, were higher than the then CDC level of concern of 25 µg/DL in 5 subjects, 3 of whom were 3 years or less in age, and were therefore unlikely to have been on the site.

**Conclusions:** This site may have contributed to the environmental burden of the IJC critical pollutants PCBs and lead. As reported in the EPA fact sheet, extensive remediation of the site, including removal of the contaminated soils and disposal offsite in a TSCA landfill and cleanup of the sewer line, was conducted and completed in 1996. The site was deleted from the NPL in 1997. Thus, the site is no longer releasing or acting as a reservoir of contaminants.

#### 3.8.1.2 Ford Motor Co. Allen Part Clay Mine

The Allen Park Clay Mine landfill, located in Allen Park (Wayne County, MI) is operated by the Ford Motor company, which developed a clay mine on the site before 1956. Starting in 1956, the area has been filled with wastes from the Ford Motor Company Rouge River Plant. Some of these wastes (electric arc furnace dust and decanter tank tar sludge) are classified by EPA as hazardous. From 1980 to 1986, the hazardous wastes were deposited separately in a hazardous waste management area at the site. This area was closed in 1986, the leachate collection system was expanded, and a clay cap was installed. Information regarding this site is taken from the 1994 ATSDR preliminary public health assessment.

**Category of Public Health Hazard:** This site was categorized as an *Indeterminate Public Health Hazard* (Category 3) because additional information was needed to evaluate possible air exposure pathways, particularly with regard to past exposures to airborne carcinogenic PAHs.

**Contaminants of Concern in Completed Exposure Pathways:** None identified. Air monitoring, however, did not include analysis for PAHs, and carcinogenic PAHs were found at concentrations above health-based screening values in several onsite media including sediments, and a storm-water drain and treatment pond. Lead and cadmium concentrations also were elevated in onsite groundwater, but no completed exposure pathway exists. Carcinogenic PAHs may include B(a)P, an IJC critical pollutant, and lead is an IJC critical pollutant. Lead and B(a)P are IJC critical pollutants.

**Demographics:** Not reported for this non-NPL site.

**Public Health Outcome Data:** The Michigan Cancer Foundation conducted two studies of cancer incidence for the communities surrounding the site, and ATSDR performed an evaluation and follow-up:

- 1983 Cancer Study: The occurrence of cancer from 1973 to 1981 was evaluated in two census tracts comprised by the Snow Woods area of Dearborn. In comparison with rates for the City of Dearborn, Wayne County, and the tri-county area (Wayne, Oakland, and Macomb Counties), the only statistically significant excesses of cancer were brain cancer in both men and women and liver cancer in women. Comparisons were made by age and sex for the white population only, because the neighborhoods were predominantly white. Risk factors such as occupational history, smoking, alcohol use, and residential history were not taken into account.

- 1989 Cancer Study: This study was a follow-up and expansion of the 1983 study. The study included a total of 10 census tracts included in the communities of Snow Woods, Melvindale, and Allen Park, which surround the Allen Park Clay Mine, and considered cancer occurrence from 1973 to 1986. The comparison communities were the City of Dearborn (excluding Snow Woods) and Wayne County (excluding the three study communities). Methods of comparison were similar to the 1983 study, except that for the brain cancer cases, occupational, smoking, and residential histories were obtained from relatives by telephone interview. The total numbers of cancer cases for the study area were lower than expected based on rates for the comparison populations of City of Dearborn and Wayne County. The only higher-than-expected cancer rate was in Snow Woods residents, with 16 cases of brain cancer over the 14-year study period, versus 6 expected. Although histories for 2 of the 16 cases could not be determined, 9 of the 16 were found to have lived near the site for 20 years or more. All but one of the seven men with brain cancer smoked and five of the seven had worked in occupations with exposure to car engine exhaust for 3-42 years. However, only one of the women with brain cancer smoked and there was no consistent occupational history among the women.

- ATSDR Evaluation: ATSDR evaluated the two previous studies and concluded that the results indicate a consistent, higher-than-expected number of cases of brain cancer in the Snow Woods from 1973 to 1986. ATSDR evaluated the current information on the number of brain and liver cancers in the study communities from 1973 to 1990. An excess in brain cancer rates occurred in Snow Woods from 1973 to 1990, but liver cancer rates in the three study communities were comparable to those in Wayne County and the other surrounding counties, Macomb and Oakland. The excess brain cancers could not, however, be attributed to the Allen Park Clay Mine site, because no completed environmental and human exposure

pathways were found for the site, and the information about potential pathways does not indicate that the site contaminants (e.g., lead and carcinogenic PAHs) are at concentrations that may be related to brain cancer. Some occupational exposures might be related to brain cancer. However, little is known about the actual causes of brain cancer. Parental exposure to PAHs has been associated with brain cancer in offspring of the exposed parents.

**Conclusions:** This site may have contributed to the environmental burden of the IJC critical pollutants B(a)P and lead, as well as other contaminants including cadmium. There are no known completed exposure pathways for human populations, however, and the elevated occurrence of brain tumors seen in one of the communities near the site is not attributable to site contaminants. Little is known about the actual causes of brain cancer.

#### 3.8.1.3 Gratiot Trailer Park

The Gratiot Trailer Park is an abandoned 16-acre trailer park in northeast Detroit (Wayne County). The property contains three abandoned buildings, about 20 collapsed, overturned, and burned trailers, abandoned cars and boats, abandoned above-ground storage tanks, and trash from unauthorized dumping. Although the site is partially fenced, access to the site is not effectively restricted. The site is surrounded by industrial properties, airport property, and a park. The information on this site is taken from the 1999 health consultation performed by ATSDR as part of a Brownfields project.

**Category of Public Health Hazard:** This site was categorized as a *Public Health Hazard* (Category 2) because of the physical hazards from the trash, trailers, tanks, and other debris, and the lack of effective restriction of access. Also some contaminants in soil are present at concentrations high enough to be of concern, and abandoned buildings contain asbestos in amounts that require special removal, and probably contain lead paint.

**Contaminants of Concern in Completed Exposure Pathways:** Not explicitly discussed. Several contaminants were found in soil at levels above Michigan's health-based clean-up values. These contaminants included the IJC critical pollutants PCBs, lead, and B(a)P, and other contaminants such as arsenic, copper, and manganese. In general, trespassers were considered unlikely to be exposed to doses that would cause adverse health effects. If the site were developed for residential use, however, these contaminants might pose health risks. Groundwater was not sampled because it not considered useful for household purposes.

**Demographics:** Not reported for this non-NPL site.

**Public Health Outcome Data:** Not reported.

**Conclusions:** This soil at this site contains elevated concentrations of several IJC critical pollutants, but the site does not appear to be a major source of these contaminants, and migration offsite has not been investigated. Trespassers do not appear likely to experience exposures high enough to cause adverse health effects. The physical hazards posed by the site are of greater concern.

#### 3.8.1.4 Joy Road Dump/Holiday Park/Holiday Nature Preserve

The Joy Road/Holiday Park Dump is located in the City of Westland (Wayne County), where unauthorized and undocumented dumping of household waste occurred. Rainwater runoff flows from the property into Tonquish Creek, which empties into the Middle Branch of the Rouge River approximately one mile from the property. The information on this site was taken from the 2000 health consultation performed by ATSDR as part of a Brownfields project.

**Category of Public Health Hazard:** This site was categorized as a *Public Health Hazard* (Category 2) because of the physicals hazards from the rubbish and waste coming to the surface and the lack of monitoring data.

**Contaminants of Concern in Completed Exposure Pathways:** None identified. Although soil in the dump areas contained the IJC critical pollutant lead, and also arsenic and copper, at concentrations above health-based screening values, no one is likely to be exposed to a degree that would be likely to result in adverse health effects. Mercury was also present in soil and surface water, but no ATSDR health-based screening values were available for those media.

**Demographics:** Not reported.

**Public Health Outcome Data:** Not reported.

**Conclusions:** This site is an area of a park where unauthorized dumping of household waste occurred. It is not likely to have contributed significantly to the environmental burden of IJC critical pollutants or other pollutants, and human populations are not exposed at levels likely to cause adverse effects on health.

#### 3.8.1.5 Lower Ecorse Creek Dump

This site was originally wetlands along the Ecorse River, which drains into the Detroit River. The wetlands were filled with construction debris and other material prior to development. In 1995, the site consisted of 11 residential lots, covering approximately 2.25 acres, which were found to have blue soil and shallow groundwater, due to cyanide contamination. The blue cyanide compound was tentatively identified as ferric ferrocyanide or Prussian blue dye. Eventually, the site involved approximately 16 residential lots. The information on this site was taken from the 1995 public health assessment conducted by ATSDR, from HazDat, and from the 2003 EPA NPL fact sheet for this site.

**Category of Public Health Hazard:** This site posed an *Urgent Public Health Hazard* (Category 1) in the past. Following removal of contaminated soil and sealing of a basement to prevent seepage of contaminated groundwater, the site was considered to pose *No Apparent Health Hazard* (Category 4). Subsequent to ATSDR's 1995 assessment, more soil contamination with cyanide contamination and also with arsenic and PAHs was discovered; eventually 3,000 cubic yards of contaminated soil were excavated and disposed of offsite.

**Contaminants of Concern in Completed Exposure Pathways:** In the past, humans were exposed to soil and basement air containing cyanide at concentrations of human health concern. In addition, shallow groundwater was contaminated with cyanide, and although not used as a

source of household water, seeped into some of the basements at the site. Some other contaminants were found in site media at concentrations that exceeded health-based screening values, but ATSDR's evaluation focused on cyanide. Although runoff from the site and contaminated groundwater from the site could discharge into the Ecorse River, ATSDR concluded that there is no indication of site-related contamination of water or sediments in the river. The site has been remediated by removal and offsite disposal of contaminated soil.

**Demographics:** Demographic profile, from the 2000 U.S. Census, for vulnerable populations living within one mile of this site:

| | |
|---|---|
| Children 6 years and younger | 1,685 |
| Females aged 15-44 | 3,967 |
| Adults 65 and older | 2,501 |

**Public Health Outcome Data:** ATSDR evaluated the medical history of a resident of the site area whose parents were concerned that his health problems may have been due to exposure to cyanide at the site. ATSDR concluded there was no evidence of a connection between the health problems and his potential exposure to cyanide in the soil, air, and groundwater.

**Conclusions:** The primary contaminant at this site was cyanide, a non-IJC pollutant. This site is more relevant to the Detroit River AOC, a binational AOC not covered by this document, than to the Rouge River AOC. The site has been remediated by excavation and offsite disposal of the contaminated soil.

### 3.8.1.6 Master Metals Inc. #2

The abandoned Master Metals property was used as a lead smelter from 1965 to 1983. In the late 1980s, ferrous sulfate heptahydrate was produced on the property. The site (size not reported) is surrounded by industrial/commercial properties, a correctional facility, and a residential development. The information on this site is taken from the 1997 health consultation prepared by ATSDR as part of a Brownfields project.

**Category of Public Health Hazard:** This site was categorized as a *Public Health Hazard* (Category 2) because of very high concentrations of lead in surface soil on the property. Also, abandoned buildings on the property pose physical hazards from deterioration and partial collapse and from containers of laboratory chemicals labeled as sodium hydroxide pellets, hydrofluorosilic acid, carbon tetrachloride, nitric acid, formaldehyde, and other chemicals. A HazDat update (2005) categorized the site as *No Public Health Hazard,* Category 5 (2005) because of no known exposure.

**Contaminants of Concern in Completed Exposure Pathways:** The IJC critical pollutant lead was found in very high concentrations, 10,000-100,000 ppm, in soil throughout the property. Trespassers and workers from the neighboring trucking operation who use the area for materials storage may, if spending a major potion of the day on the property, incidentally ingest enough lead from soil to exceed the amounts that cause minor adverse health effects in humans. Also cadmium levels in soil are high enough so that anyone spending a major portion of the day on the property might incidentally ingest cadmium doses from soil exceeding the ATSDR MRL or EPA RfD.

**Demographics:** Not reported, but a residential area is next to the site.

**Public Health Outcome Data:** Not reported.

**Conclusions:** This site may be contributing to the environmental burden of the IJC critical pollutant lead, as well as other contaminants including cadmium. As of 1997, no clean-up of the highly contaminated soil had been performed, and containers of hazardous chemicals were located in the deteriorating buildings on the site, which is not secure from trespassers, and a portion of which is in use by an adjacent firm for materials storage. However, as of 2005, HazDat reports no *Public Health Hazard* as of 2005 as there are no known exposures, and the offsite contamination of lead in soil has been remediated.

#### 3.8.1.7 Packard Plant

The Packard Plant property is a complex of buildings in Detroit (Wayne County) that were used from 1907 to 1956 for automobile and truck manufacturing. Since 1960, the property has been used as an industrial park, but large sections are vacant and deteriorating, with trash accumulating. The information regarding this site is taken from the ATSDR 1998 health consultation, prepared as part of a Brownfields project.

**Category of Public Health Hazard:** This site was categorized as a *Public Health Hazard* (Category 2) because of the physical hazards from the waste materials (including old tires and bundled plastic) and the decay of the buildings.

**Contaminants of Concern in Completed Exposure Pathways:** None identified. Lead-containing paint and asbestos-containing insulation are present in the buildings, and need to be handled properly during demolition or rehabilitation of the property to prevent exposure to workers or nearby residents. Concentrations of lead in soil were within the range typically found in urban areas near buildings the age of the Packard Plant buildings.

**Demographics:** Not reported.

**Public Health Outcome Data:** Not reported.

**Conclusions:** This site does not appear to be a significant contributor to environmental burdens of the IJC critical pollutants, or other pollutants.

#### 3.8.1.8 Proposed Beard Street School/New Beard Elementary School

The site of the New Beard Elementary School, a 6.45-acre property in Detroit (Wayne County), has a long history of industrial use that left contaminants in the soil. The information on this site is taken from the 2002 health consultation by ATSDR that was performed as part of the Brownfields Redevelopment Assessment of the property.

**Category of Public Health Hazard:** This site was originally categorized as an *Indeterminate Public Health Hazard* (Category 3) because while subsurface soil samples contained contaminants at levels potentially of health concern, adequate data on surface soil were not available. The 2002 health consultation, based on the additional soil data obtained after the

original assessment, and taking into account the physical barriers to exposure, concluded that the property poses *No Public Health Hazard* (Category 5).

**Contaminants of Concern in Completed Exposure Pathways:** None. Contaminants formerly found in soil at concentrations exceeding health-based screening values included the IJC critical pollutants PCBs, B(a)P, and lead, and the non-IJC contaminant arsenic. Site remediation included removal of the existing surface soil, removal of remaining PCB-contaminated soil, and installation of a site cap on all areas of the site not covered by pavement or the school's slab foundation. The contaminants remaining in the soil under the cap/pavement/slab at concentrations exceeding health-based screening values were arsenic, B(a)P, and cyanide. ATSDR determined that no completed exposure pathways exist. The property is to be inspected regularly to ensure that the protective coverings remain effective. Groundwater is not commonly found in the area and is not used for drinking.

**Demographics:** Not reported.

**Public Health Outcome Data:** Not reported.

**Conclusions:** This site may have contributed to the environmental burden of the IJC critical pollutants PCBs, B(a)P, and lead, as well as other contaminants including arsenic. The property is not large, however, and was not highly contaminated. Surface soil and PCB-contaminated soil has been removed and disposed offsite, and the soil has been covered with a cap, paving, or the foundation slab of the school. Thus, the site is not likely to result in human or environmental exposures to contaminants.

#### 3.8.1.9 Wholesale Russell/Mack

The Wholesale Russell/Mack property is a former industrial and residential Block in Detroit (Wayne County). All buildings have been removed, and the surrounding blocks are primarily industrial and commercial, plus one block of condominiums. The information on this site is taken from the ATSDR 1997 health consultation as part of a Brownfields project.

**Category of Public Health Hazard:** This site was categorized as a *Public Health Hazard* (Category 2) primarily because of food waste dumped on the property, which could present health risks from decay and the attraction of disease-carrying insects and rodents. In addition chemical contamination in one area of the property was of concern.

**Contaminants of Concern in Completed Exposure Pathways:** The IJC critical pollutant lead was present in soil at one location at concentrations high enough to be of concern from incidental ingestion if people frequently visited that area. The concentrations of the IJC critical pollutant B(a)P were elevated above health-based screening values and the maximum also was above the range typically found in urban areas, but the other values were not.

**Demographics:** Not reported. A block of condominiums is located nearby.

**Public Health Outcome Data:** None reported.

**Conclusions:** This site may have contributed to the environmental burden of the IJC critical pollutants lead and B(s)P, but elevated soil concentrations were found primarily in one area of the property, and ATSDR concluded that the chemical contamination did not pose any imminent health hazard. Further evaluation of this contamination to determine its extent was recommended. The main concern was food waste dumped on the property.

#### 3.8.1.10 Old World Trade Center

The approximately 10-acre Old World Trade Center (Kelsey-Hayes) property is a former industrial plant in Detroit (Wayne County). From 1955 to 1977, the Kelsey-Hayes Company operated a facility there for the machining of cast-iron brake components. After that time, the remaining machinery and stock was removed and the buildings were vacated. Parts of the property were then used for flea markets, storage, and warehousing. The property also contained many thousands of drums containing corrosive, volatile, or flammable chemicals. Some drums were open or on their sides, and evidence of spills and leaks was seen. Many drums were removed in 1996. Information regarding this site is taken from the 1997 ATSDR health consultation performed as part of a Brownfields project.

**Category of Public Health Hazard:** This site was categorized as a *Public Health Hazard* (Category 2) because of the physical hazards posed by the collapsing building, broken glass, and other debris. In addition, although soil concentrations of contaminants did not present an imminent health hazard, they were considered to pose a potential long-term health hazard. Groundwater was not tested, but tends to be sparse and is not used for drinking water.

**Contaminants of Concern in Completed Exposure Pathways:** Not explicitly discussed. The soil concentrations of the IJC critical pollutants lead and B(a)P were in excess of health-based screening levels or clean-up criteria for commercial and industrial use, as well as for residential use, in several samples, including soil samples from inside a collapsing building.

**Demographics:** Not reported.

**Public Health Outcome Data:** None reported.

**Conclusions:** This site may contribute to the environmental burden of the IJC critical pollutants lead and B(a)P lead, but levels of contamination are not exceptionally high, and the barrels of chemicals have been removed.

#### 3.8.1.11 Cemetery Dump

The 10-acre Cemetery Dump, located 0.5 miles south of Rose Center (Oakland County) is a former sand and gravel pit into which illegal dumping and burying of an estimated 250 barrels containing industrial toxic wastes occurred. These drums were excavated, along with the surrounding contaminated soil, and disposed of at a RCRA approved landfill in 1988. Information regarding this site is taken from the 1992 ATSDR public health assessment, HazDat, and the 2003 EPA NPL fact sheet for this site.

**Category of Public Health Hazard:** This site was originally categorized as an *Indeterminate Public Health Hazard* (Category 3). A subsequent 1992 health assessment concluded that the site poses *No (Apparent) Public Health Hazard* (Category 4).

**Contaminants of Concern in Completed Exposure Pathways:** None. Several rounds of monitoring of residential wells, and of onsite monitoring wells, starting in 1981 and continuing through 1989 (post-remediation), have not detected elevated levels of contaminants. The IJC critical pollutant PCBs and lead were detected in the contents of some of the deteriorated drums and contaminated soil, but concentrations were not exceptionally high, and those materials were removed during remediation of the site.

**Demographics:** Approximately 1,000 people resided within 1 mile of the site.

**Public Health Outcome Data:** None reported.

**Conclusions:** Although the site history suggests that the site may have contributed to environmental burdens of hazardous chemicals including PCBs and lead, groundwater monitoring did not provide any evidence of migration of contaminants offsite, and the drums and surrounding contaminated soil have been remediated.

#### 3.8.1.12 Continental Aluminum Company

The Continental Aluminum Corporation is an active aluminum recycling foundry in New Hudson (Oakland County). This facility reports releases through TRI, and thus, its emissions also are included in that section of this document. Residential communities are located north, northeast, and southwest of the plant, and an elementary school is located one-half mile northeast of the plant. The information regarding this site is taken from the 2003 ATSDR health consultation for this site.

**Category of Public Health Hazard:** This site was categorized as an *Indeterminate Public Health Hazard* (Category 3) because levels of chemical emission during possible high release events (odor events) have not been determined, there is a potentially exposed population, and there is a plausible relationship between the health effects of concern to the community and the chemicals released by the facility.

**Contaminants of Concern in Completed Exposure Pathways:** None identified. Stack testing and air dispersion modeling performed by the Michigan Department of Environmental Quality (MDEQ) indicates that emission of chlorine, hydrogen chloride, and hydrogen fluoride were below health-based screening levels for air. These data are not adequate, however, because concentrations during odor events may be higher. In addition, records of time of symptoms versus time of odor events are needed to evaluate the potential association. In addition, emissions data for other chemicals including the IJC critical pollutants PCDDs and PCDFs have not yet been provided for evaluation.

**Demographics:** Not reported. There are residential neighborhoods near the facility.

**Public Health Outcome Data:** Not reported. The community members reported health effects that appeared episodic, and thus possibly occurred during breaches of the pollution control devices of Continental Aluminum. These effects included irritation to the mucous membranes evidenced by nose bleeds, sore throat, coughing, difficult breathing, burning eyes, headache, and nausea. A metallic or varnish taste and burnt plastic odor also have been reported during odor events.

**Conclusions:** This site is not a hazardous waste site, but rather a facility that reports emissions to the TRI. Stack monitoring data were inadequate to fully assess whether contaminants are present in completed exposure pathways at concentrations that may be a health threat.

### 3.8.1.13 Hi-Mill Manufacturing Company

The Hi-Mill Manufacturing Company site is located on a 2.5-acre site west of the City of Highland (Oakland County), MI. It borders on a state recreation area and is adjacent to a pond and wetlands that may connect to Waterbury Lake. The company has been fabricating tubular aluminum, copper, and brass components for the air conditioning and refrigeration industries since 1946. Previous to 1983, the company deposited wastewater from pickling operations in an onsite seepage lagoon, and also used spray evaporation as a means of disposal. After October 1983, the waste disposal methods shifted to recycling rise water and offsite disposal of the remaining waste in a RCRA hazardous waste facility (after neutralization and storage in underground tanks). Following the discovery of elevated levels of chromium, aluminum, copper, nickel, and zinc in lagoon water and sludge, the contaminated water, sludge, and adjacent soil were removed, and the lagoon was filled with sand, and then the pickling operation was eliminated in 1988. The information regarding this site was taken from the 1991 preliminary health assessment conducted by ATSDR and from the 2003 EPA NPL fact sheet for this site.

**Category of Public Health Hazard:** This site was categorized as an *Indeterminate Public Health Hazard* (Category 3) because of the potential threat to human health from exposure to contaminants and inadequate data regarding the contaminant levels and duration of exposure.

**Contaminants of Concern in Completed Exposure Pathways:** No IJC critical pollutants were considered contaminants of concern at this site. Trichloroethylene at concentrations above the EPA drinking water standard was found in onsite wells used for the plant's drinking water and manufacturing processes at the plant. Although employees were given bottled water (because of complaints about the quality of the well water), even prior to the discovery of the trichloroethylene, the well water continued to be used for other purposes until the end of 1988, at which time, the wells were sealed, so inhalation and dermal exposures were possible before then. Although groundwater concentrations of trichloroethylene and chromium in onsite monitoring of the shallow groundwater aquifer exceeded the EPA standard for drinking water, the shallow aquifer is not and has never been used for drinking water. Residential drinking water wells are not contaminated.

**Demographics:** Demographic profile, from the 2000 U.S. Census, for vulnerable populations living within one mile of this site:

| | |
|---|---|
| Children 6 years and younger | 138 |
| Females aged 15-44 | 292 |

| | |
|---|---|
| Adults 65 and older | 167 |

**Public Health Outcome Data:** None reported.

**Conclusions:** The main contaminants associated with this site were trichloroethylene and chromium. The site has been remediated by removal of the contaminated lagoon water and sludge and adjoining soil. The shallow groundwater aquifer remains contaminated but is not used as a source of drinking water. There appears to have been some contamination of the nearby pond and lake with metals, but there is no discernable impact. Exposure of the workers before the distribution of bottled water was likely by ingestion and by inhalation and dermal contact before and after the distribution of bottled water. After bottled water was distributed for drinking, exposure may have occurred by inhalation and dermal if workers showered or washed their hands with water.

The EPA reported (2006) that although this municipal supply well and the plant production wells contributed to human exposure to VOCs, the wells have been sealed and a replacement well was installed in an uncontaminated area. It was not the source of contamination, which remains unknown. It has been taken off-line. Monitoring of the groundwater continues.

The EPA reported (2006) that the Hi-Mill Manufacturing Company site is located on a 4.5-acre site west of the City Township of Highland (Oakland County), MI.

### 3.8.1.14 J & L Landfill

The J & L Landfill is located in Avon Township (Oakland County), MI. There are several other landfills; two adjacent to the site and at least seven others within 0.5 miles of the site. The approximately 17-acre site was originally mined for sand and gravel. Starting in 1951, the pits were used for disposal of slag from steel manufacturing and other wastes, followed by dust from electric arc furnace operations. By 1980, the site had been filled to grade, and the landfill was closed. Approximately 455,000 cubic yards of material has been estimated for this landfill. Drainage ditches from the site eventually flow into the Clinton River, one mile northeast of the site. As of 1993, the landfill had no liner, and was covered with a clay cap that was not adequate. Subsequent remediation included installation of an improved cap, fencing, and restriction of groundwater use. The information regarding this site was taken from the 1993 ATSDR preliminary public health assessment, HazDat, and the 2003 EPA NPL fact sheet and Record of Decisions (RODs – cleanup actions for a site).

**Category of Public Health Hazard:** This site was originally categorized by ATSDR in 1989 as an *Indeterminate Public Health Hazard* (Category 3). The 1993 health assessment by ATSDR concluded that the site poses *No Apparent Public Health Hazard* (Category 4), because no completed exposure pathway associated with the site results in an exposure that is likely to be of health concern, but some potential pathways, if they become complete in the future, could result in a hazard to public health. A subsequent ATSDR site review and update concluded that the site poses *No Public Health Hazard* (Category 5).

**Contaminants of Concern in Completed Exposure Pathways:** None. The landfill materials and ditches draining the site contained heavy metals, including the IJC critical pollutant lead, at above health-based screening values, but were not in completed exposure pathways at levels of

concern for human health. Some contaminants found in onsite groundwater and surface water were also found upgradient of the site and therefore, were considered to have other sources; levels of contamination would be of concern if the water were used for drinking water, but it is not. Fish in the Clinton River are contaminated with PCBs, but this contamination does not appear to be related to the site.

**Demographics:** Demographic profile, from the 2000 U.S. Census, for vulnerable populations living within one mile of this site:

| | |
|---|---|
| Children 6 years and younger | 489 |
| Females aged 15-44 | 997 |
| Adults 65 and older | 346 |

**Public Health Outcome Data:** None reported. Because there are no indications that humans have been significantly exposed to site-related contaminants, ATSDR concluded that an evaluation of health outcome data was not indicated.

**Conclusions:** This site does not result in exposure of humans to contaminants at levels that are considered hazardous to health. The site has been remediated through capping, fencing, and restriction of groundwater use. It is possible that in the past, this site has contributed to Clinton River burdens of heavy metals including the IJC critical pollutant lead.

### 3.8.1.15 Rose Township Dump

The Rose Township Dump (Rose Township/Demode Road site) is a 110-acre site located in the northwest corner of Oakland County, MI. From 1966 to 1968, paint sludges and other wastes from Detroit area industries were discharged onto surface soil and into shallow lagoons, and drums containing wastes were left on the surface or buried. Dumping continued intermittently through 1971. Cleanup was initiated in 1971, and intensified in 1979-1980 with the removal of leaking and bulging drums. Additional drums of wastes plus about 20 cubic yards of PCB-contaminated soil were removed in 1985 and 1986. In 1988, ATSDR conducted a public health assessment, which is the source of much of the information presented here. Additional information, from the 2003 EPA NPL fact sheet for this site, indicates that starting in 1992, remediation by onsite incineration of soil, groundwater treatment, and soil vapor extraction of subsurface soils has occurred. EPA's 5-year review in 2002 found that complete capture of the groundwater plume is not occurring. Groundwater treatment may be continued for 10-30 years.

**Category of Public Health Hazard:** This site was categorized in 1988 by ATSDR as an *Indeterminate Public Health Hazard* (Category 3) because the limited offsite monitoring precluded a determination of the public health impact.

**Contaminants of Concern in Completed Exposure Pathways:** Not explicitly discussed in the 1988 health assessment. ATSDR's concerns were for incidental ingestion and dermal exposure to contaminated surface water, soil, and sediment by trespassers engaged in recreational activities on site. The contaminants in soil at elevated concentrations included the IJC critical pollutants PCBs and lead, as well as other chemicals including arsenic and VOCs such as toluene and trichloroethylene. Some of these contaminants were found in surface water as well. Onsite groundwater contained VOCs including toluene and vinyl chloride, and also PCBs. Although

monitoring of nearby residential wells did not indicate contamination by site chemicals, testing did not include all site-related chemicals. The residents of Rose Township depend on groundwater for their drinking water. ATSDR was concerned about the possible contamination of fish with PCBs and lead, since marsh sediments were contaminated with these chemicals, but fish were not analyzed, and levels of contamination in sediment were not reported in the health assessment or in HazDat.

**Demographics:** Demographic profile, from the 2000 U.S. Census, for vulnerable populations living within one mile of this site:

| | |
|---|---|
| Children 6 years and younger | 66 |
| Females aged 15-44 | 138 |
| Adults 65 and older | 41 |

**Public Health Outcome Data:** None reported.

**Conclusions:** This site is likely to have contributed to the environmental burden of the IJC critical pollutants, PCBs and lead, as well as other contaminants including VOCs. Data regarding offsite migration were incomplete, but surface water drains into marshes, wetlands, and the heads of two (unspecified) rivers via local streams, and into local lakes and ponds. As reported in the EPA fact sheet, extensive remediation of the site, including onsite incineration of soil, vapor extraction of subsurface soil, and groundwater extraction and treatment has largely eliminated releases of contaminants from the site, with the exception of groundwater. Complete capture of the groundwater plume was not occurring, but residential wells were not yet affected. Groundwater treatment is anticipated to continue for 10-30 years in order to reach clean-up goals.

### 3.8.1.16 Springfield Township Dump

This four-acre site is located in Oakland County, approximately 35 miles northwest of Detroit, MI. Between 1966 and 1968, liquid wastes and sludges were dumped into an onsite pit, and approximately 1,500 drums of waste materials were also deposited on the site. Drum contents included paint sludges, solvents, PCBs, oils, and grease. In 1979-1980, the drums were removed and disposed of offsite. In 1983, approximately 711 tons of contaminated soil was removed for offsite disposal. Public access to the site is restricted by fencing, and there are no signs of trespassing. Further remediation has occurred since the time that ATSDR prepared its public health assessment. The information on this site is taken from the 1988 ATSDR public health assessment, HazDat, and the 2003 EPA NPL fact sheet for this site.

**Category of Public Health Hazard:** This site was categorized as an *Indeterminate Public Health Hazard* (Category 3) because of the lack of monitoring data for a potential exposure pathway, consumption of potentially contaminated wildlife.

**Contaminants of Concern in Completed Exposure Pathways:** None identified. Onsite soil was contaminated with the IJC critical pollutants PCBs and lead, as well as other contaminants including VOCs and cadmium. Onsite sludges contained PCBs and dieldrin (one sample). No completed exposure pathway exists for these media, and offsite monitoring indicated that migration to adjacent wetlands was not significant. Onsite groundwater in the area of the former

disposal pit was contaminated above EPA MCLs with trichloroethene and 1,1-dichloroethene, but offsite monitoring and domestic wells are not contaminated with site-related chemicals. Future migration to residential wells is possible based on the apparent direction of groundwater flow towards a cluster of residences northeast of the site. Given the potential for some of the site contaminants to bioaccumulate (e.g., PCBs), ATSDR was concerned about the lack of data regarding contaminant levels in tissues of game animals.

**Demographics:** Demographic profile, from the 2000 U.S. Census, for vulnerable populations living within one mile of this NPL site:

| | |
|---|---|
| Children 6 years and younger | 149 |
| Females aged 15-44 | 278 |
| Adults 65 and older | 65 |

**Public Health Outcome Data:** None reported.

**Conclusions:** This site may have contributed to the environmental burden of the IJC critical pollutants, PCBs and lead, as well as other contaminants including VOCs, but offsite migration did not appear to be occurring in 1989. As reported in the EPA fact sheet, extensive remediation of the site, including onsite soil-washing and/or offsite disposal of about 12,000 cubic yards of PCB-laden soils, in-situ soil vapor extraction of VOCs from subsurface soils, onsite solidification of metals-laden soils, groundwater extraction and treatment, and installation of a soil cover and vegetation. The soil vapor extraction is expected to continue for 2-5 years and the groundwater treatment for another 2-5 years beyond the soil vapor extraction before cleanup levels are reached.

### 3.8.2 TRI Data for the Rouge River AOC

The TRI onsite chemical releases for Wayne and Oakland Counties (combined) are summarized in Table 3.8-D. Total onsite releases in 2001 were 24,621,119 pounds, the majority of which were released to air and land. Little was released to surface water. Wayne County accounted for 89% and Oakland County accounted for 11% of the total onsite releases.

Of the total onsite releases, 1,693,551 pounds (6.9%) was IJC critical pollutants. The IJC critical pollutants released were PCDDs and PCDFs (primarily to air), and PCBs (>1,000,000 pounds), lead and lead compounds (> 400,000 pounds), mercury and mercury compounds, toxaphene, and hexachlorobenzene (primarily to land). The facilities that released these pollutants are listed in Table 3.8-E.

The major releases (≥ 500,000 pounds) of non-IJC chemicals were of hydrochloric acid aerosols, xylenes, certain glycol ethers, n-butyl alcohol, and toluene (primarily to air); and nickel compounds, selenium, and arsenic compounds (primarily to land).

### 3.8.3 NPDES Data for the Rouge River AOC

The NPDES permitted discharges for Wayne and Oakland Counties, MI are summarized in Table 3.8-F. The total average annual permitted discharges in 2004 were 4,665,607 pounds, the

majority of which was phosphorus. Ammonia nitrogen also was permitted to be discharged in substantial amounts (approximately 602,000 pounds).

The IJC critical pollutants PCBs (0.08 pound), lead (approximately 5530 pounds) and mercury (102 pounds) were permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.8-G.

### 3.8.4 County Demographics and Health Status Data for the Rouge River AOC

The demographic profile, from the 2000 U.S. Census, for vulnerable populations living in the two counties of this AOC is shown in Table 3.8-H.

**Table 3.8-H County Demographic Profiles for the Rouge River AOC**

| Vulnerable population | Wayne County | Oakland County | Total for AOC |
|---|---|---|---|
| Children 6 years and younger | 219,731 | 113,971 | 333,702 |
| Females aged 15-44 | 454,698 | 261,556 | 716,254 |
| Adults 65 years and older | 248,982 | 134,969 | 383,951 |

According to the 2000 HRSA community health status reports, health status indicators that compared unfavorably with those of the U.S. and also with the median of the peer counties for the two counties relevant to the Rouge River AOC were as follows (indicators that were above the upper limit of the peer county range are bolded):

Wayne County, MI:
Infant mortality (per 1,000 births)

- **infant mortality**
- black infant mortality
- **neonatal infant mortality**
- **post-neonatal infant mortality**

Birth measures (as percent)

- **low birth weight**
- **very low birth weight**
- **premature births**
- unmarried mothers
- no care in first trimester

Death measures (per 100,000 population)

- **breast cancer (female)**
- colon cancer
- coronary heart disease
- lung cancer
- stroke

Oakland County, MI:
Infant mortality (per 1,000 births)

- black infant mortality

Birth measures (as percent)

- none

Death measures (per 100,000 population)

- stroke

### 3.8.5 Summary and Conclusions for the Rouge River AOC

Two Michigan counties are relevant to this AOC: Wayne County and Oakland County. Oakland County also impacts the Clinton River AOC (Section 3.9).

#### 3.8.5.1 Hazardous Waste Sites

**Wayne County:** Seven of the 10 waste sites in Wayne County (reviewed in Sections 3.8.1.1 through 3.8.1.10) were assessed by ATSDR as part of Brownfields projects. For two of these sites, the major health concerns were not for chemical exposure. The remaining five sites all were contaminated with lead and some were contaminated with B(a)P and one with PCBs. The extent of contamination—with lead—was high at only one of these sites, the Master Metals Inc. #2 site. Only one of the sites (Proposed Beard Street School) has been cleaned up.

The three hazardous waste sites (Carter Industrials, Inc.; Ford Motor Co. Allen Park Clay Mine; Lower Ecorse Creek) in Wayne County have been remediated through clean up or institutional controls. There is no evidence that human exposure to site-related contaminants is currently occurring at concentrations or doses that exceed health-based screening values.

In the past, however, two of those hazardous waste sites may have contributed to the environmental burden of IJC critical pollutants, particularly PCBs, B(a)P, and lead. Exposure may have included inhalation of fugitive dust and incidental ingestion and dermal contact with soil. Exposure at the third site (Lower Ecorse Creek) was to cyanide.

Public health outcome data, available for the three hazardous waste sites, generally did not indicate unusual rates of health conditions, or did not indicate an association with site-related exposures.

**Oakland County:** The five hazardous waste sites in Oakland County have undergone remediation, and there is no evidence that human exposure is occurring to site-related contaminants of concern. Groundwater at two sites, however, is still undergoing extraction and treatment, and vapor extraction of subsurface soil is ongoing at one site.

In the past, three of the waste sites may have contributed to the environmental burden of the IJC critical pollutants, lead (all 3 sites) and PCBs (2 sites); these pollutants were found primarily in soil.

The sixth site in this county was an active manufacturing facility that reports through TRI.

**Issues for Follow-Up**

Master Metals Inc. #2: This former lead smelter had high lead concentrations in soil throughout the property. As of 1997, no cleanup of the soil had been performed, so this site may still be contributing to the environmental burden of lead. In addition, containers of hazardous chemicals

were stored in the deteriorating buildings on the site. Although lead has been detected onsite, HazDat reported for 2005 that no known exposure exists and offsite remediation had occurred. Rose Township Dump (Oakland County): Complete capture of the groundwater plume was not occurring as of 2002, but residential wells were not yet affected. There is the potential, however, for residential wells to be affected in the future.

#### 3.8.5.2 TRI Data

Onsite TRI releases in Wayne and Oakland Counties (combined) totaled 24,621,119 pounds in 2001, primarily to air and land. Wayne County accounted for 89% and Oakland County accounted for 11% of the total onsite releases.

Of the total onsite releases, 1,693,551 pounds (6.9%) was IJC critical pollutants, mainly PCBs and lead compounds. The IJC critical pollutants released were PCDDs and PCDFs (primarily to air), and PCBs, lead and lead compounds, mercury and mercury compounds, toxaphene, and hexachlorobenzene (primarily to land).

The major releases (≥ 500,000 pounds) of non-IJC chemicals were of hydrochloric acid aerosols, xylenes, certain glycol ethers, n-butyl alcohol, and toluene (primarily to air); and nickel compounds, selenium, and arsenic compounds (primarily to land).

#### 3.8.5.3 NPDES Data

The NPDES permitted discharges for Wayne and Oakland Counties, MI are summarized in Table 3.8-F. The total average annual permitted discharges in 2004 were 4,665,607 pounds, the majority of which was phosphorus. Ammonia nitrogen also was permitted to be discharged in substantial amounts (approximately 602,000 pounds).

The IJC critical pollutants PCBs (0.08 pound), lead (approximately 5530 pounds) and mercury (102 pounds) were permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.8-G.

#### 3.8.5.4 County Demographics and Health Status Indicators

Wayne County (vulnerable populations 923,411) had an unusually large number of health status indicators that compared unfavorably with those of the U.S. and with the median of the peer counties, including infant mortality indicators, birth measures and death measures. Some of the indicators in each of these three categories also were elevated above the upper limit of the peer county range.

In contrast, Oakland County (vulnerable populations 510,496) had only two health status indicators that compared unfavorably with those of the U.S. and also with the median of the peer counties: these were black infant mortality and deaths from stroke.

#### 3.8.5.5 Beneficial Use Impairments (BUIs)

Of the three health-related BUIs, restrictions on fish and wildlife consumption and beach closings were the two BUIs listed as impaired at this AOC site. Further information is available at the EPA web site (http://www.epa.gov/glnpo/aoc/).

**Table 3.8-C Waste Site Contaminants that Exceeded Health-Based Screening Values**
**Rouge River AOC**

| | | | Number of Records | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **CAS No.** | **Chemical Name** | **IJC Tracking Number** | **Air** | **Biota** | **Human Material** | **Other Media** | **Soil** | **Water** | **Total** |
| 053469-21-9 | AROCLOR 1242 | 1 | 1 | | | 1 | 1 | | 3 |
| 012672-29-6 | AROCLOR 1248 | 1 | | | | 1 | | 1 | 2 |
| 011097-69-1 | AROCLOR 1254 | 1 | | | | 1 | 2 | | 3 |
| 011096-82-5 | AROCLOR 1260 | 1 | | | | 1 | 1 | | 2 |
| 001336-36-3 | POLYCHLORINATED BIPHENYLS | 1 | 1 | 6 | 1 | 6 | 21 | 4 | 39 |
| 003268-87-9 | OCTACHLORODIBENZO-P-DIOXIN | 2 | | | | | 1 | | 1 |
| HZ0400-02-T | POLYCHLORINATED DIBENZO-P-DIOXINS | 2 | | | | 1 | | | 1 |
| 000050-32-8 | BENZO(A)PYRENE | 4 | | | | 2 | 26 | | 28 |
| HZ1500-02-T | PAHS (CARCINOGENIC) | 4 | | | | | 1 | 1 | 2 |
| 000072-54-8 | DDD, P,P'- | 5 | | 4 | | 1 | 6 | 1 | 12 |
| 000072-55-9 | DDE, P,P'- | 5 | | 4 | | 1 | 5 | 1 | 11 |
| 000050-29-3 | DDT, P,P'- | 5 | | 4 | | | 12 | 1 | 17 |
| 000309-00-2 | ALDRIN | 6 | | 2 | | | 4 | | 6 |
| 000060-57-1 | DIELDRIN | 6 | | 4 | | 1 | 7 | | 12 |
| 007439-92-1 | LEAD | 8 | 1 | 3 | 1 | 10 | 36 | 15 | 66 |
| 007439-97-6 | MERCURY | 9 | | 4 | | 1 | 20 | 2 | 27 |
| 000118-74-1 | HEXACHLOROBENZENE | 11 | | 4 | | | 2 | | 6 |
| | | **Total IJC** | **3** | **35** | **2** | **27** | **145** | **26** | **238** |
| 000071-55-6 | 1,1,1-TRICHLOROETHANE | | | | | | 1 | 1 | 2 |
| 000075-34-3 | 1,1-DICHLOROETHANE | | | | | | 2 | 1 | 3 |
| 000075-35-4 | 1,1-DICHLOROETHENE | | | | | | | 2 | 2 |
| 000120-82-1 | 1,2,4-TRICHLOROBENZENE | | | | | | 2 | | 2 |
| 000095-63-6 | 1,2,4-TRIMETHYLBENZENE | | | | | | 5 | | 5 |
| 000095-50-1 | 1,2-DICHLOROBENZENE | | | | | | 3 | | 3 |
| 000156-59-2 | 1,2-DICHLOROETHENE, CIS- | | | | | | | 1 | 1 |
| 000108-67-8 | 1,3,5-TRIMETHYLBENZENE | | | | | | 5 | | 5 |
| 000541-73-1 | 1,3-DICHLOROBENZENE | | | | | | 5 | | 5 |
| 000106-46-7 | 1,4-DICHLOROBENZENE | | | | | | 5 | 1 | 6 |
| 000120-83-2 | 2,4-DICHLOROPHENOL | | | | | | 2 | | 2 |
| 000105-67-9 | 2,4-DIMETHYLPHENOL | | | | | | 2 | | 2 |
| 000078-93-3 | 2-BUTANONE | | | | | 2 | 4 | 3 | 9 |
| 000091-58-7 | 2-CHLORONAPHTHALENE | | | | | | 2 | | 2 |
| 000095-57-8 | 2-CHLOROPHENOL | | | | | | 2 | | 2 |
| 000091-57-6 | 2-METHYLNAPHTHALENE | | | | | 1 | 14 | | 15 |
| 000100-01-6 | 4-NITROANILINE | | | | | | 3 | | 3 |
| 000083-32-9 | ACENAPHTHENE | | | | | | 5 | | 5 |
| 000208-96-8 | ACENAPHTHYLENE | | | | | | 13 | | 13 |
| 000067-64-1 | ACETONE | | | | | | 2 | | 2 |
| 056534-02-2 | ALPHA CHLORDENE | | | | | | 1 | | 1 |
| 007429-90-5 | ALUMINUM | | | 1 | | 1 | 7 | 6 | 15 |
| 000120-12-7 | ANTHRACENE | | | | | | 6 | | 6 |
| 007440-36-0 | ANTIMONY | | | | | 3 | 19 | 1 | 23 |
| 007440-38-2 | ARSENIC | | | | | 8 | 34 | 10 | 52 |
| 001332-21-4 | ASBESTOS | | | | | 2 | | | 2 |
| 007440-39-3 | BARIUM | | | | | 4 | 25 | 11 | 40 |
| 000071-43-2 | BENZENE | | | | | 3 | 4 | 6 | 13 |
| 000056-55-3 | BENZO(A)ANTHRACENE | | | | | 2 | 21 | | 23 |
| 000205-99-2 | BENZO(B)FLUORANTHENE | | | | | 2 | 19 | | 21 |
| 000191-24-2 | BENZO(GHI)PERYLENE | | | | | | 17 | | 17 |
| 000207-08-9 | BENZO(K)FLUORANTHENE | | | | | 2 | 17 | | 19 |
| 007440-41-7 | BERYLLIUM | | | | | | 19 | 3 | 22 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 000085-68-7 | BUTYL BENZYL PHTHALATE | | | | | | 10 | 1 | 11 |
| 007440-43-9 | CADMIUM | | 1 | | | 9 | 29 | 9 | 48 |
| 000086-74-8 | CARBAZOLE | | | | | | 14 | | 14 |
| 000056-23-5 | CARBON TETRACHLORIDE | | | | | | 2 | | 2 |
| 000057-74-9 | CHLORDANE | | | 4 | | | | | 4 |
| 016887-00-6 | CHLORIDE | | 1 | | | | | | 1 |
| HZ0400-01-T | CHLORINATED DIOXINS, UNSPECIFIED | | | | | | 1 | | 1 |
| 007782-50-5 | CHLORINE | | 2 | | | | | | 2 |
| 000108-90-7 | CHLOROBENZENE | | | | | 2 | 2 | 1 | 5 |
| 000124-48-1 | CHLORODIBROMOMETHANE | | | | | | | 1 | 1 |
| 000067-66-3 | CHLOROFORM | | | | | | | 1 | 1 |
| 000074-87-3 | CHLOROMETHANE | | | | | | 2 | | 2 |
| 007440-47-3 | CHROMIUM | | 1 | | | 7 | 29 | 9 | 46 |
| 018540-29-9 | CHROMIUM, HEXAVALENT | | | | | 1 | 1 | 2 | 4 |
| 000218-01-9 | CHRYSENE | | | | | | 15 | | 15 |
| 012001-29-5 | CHRYSOTILE ASBESTOS | | | | | 1 | | | 1 |
| 005103-71-9 | CIS-CHLORDANE | | | | | 1 | 11 | 1 | 13 |
| 007440-48-4 | COBALT | | | | | | 17 | 4 | 21 |
| 007440-50-8 | COPPER | | | 3 | | 6 | 23 | 7 | 39 |
| 000095-48-7 | CRESOL, ORTHO- | | | | | | 7 | | 7 |
| 000106-44-5 | CRESOL, PARA- | | | | | 2 | 6 | 3 | 11 |
| 000098-82-8 | CUMENE | | | | | | 5 | | 5 |
| 000057-12-5 | CYANIDE | | 2 | | | 1 | 37 | 13 | 53 |
| 000117-81-7 | DI(2-ETHYLHEXYL)PHTHALATE | | | | | 3 | 14 | 7 | 24 |
| 000053-70-3 | DIBENZO(A,H)ANTHRACENE | | | | | 2 | 18 | | 20 |
| 073506-91-9 | DICHLOROBROMOETHANE | | | | | | | 1 | 1 |
| 000131-11-3 | DIMETHYL PHTHALATE | | | | | | 3 | | 3 |
| 000084-74-2 | DI-N-BUTYL PHTHALATE | | | | | | 6 | | 6 |
| 000117-84-0 | DI-N-OCTYL PHTHALATE | | | | | 1 | 11 | 1 | 13 |
| 001031-07-8 | ENDOSULFAN SULFATE | | | | | | 4 | | 4 |
| 000959-98-8 | ENDOSULFAN, ALPHA | | | | | | 5 | | 5 |
| 033213-65-9 | ENDOSULFAN, BETA | | | | | | 5 | | 5 |
| 000072-20-8 | ENDRIN | | | | | | 5 | | 5 |
| 007421-93-4 | ENDRIN ALDEHYDE | | | | | | 3 | | 3 |
| 053494-70-5 | ENDRIN KETONE | | | | | | 5 | | 5 |
| 000100-41-4 | ETHYLBENZENE | | | | | 2 | 6 | | 8 |
| 000206-44-0 | FLUORANTHENE | | | | | | 16 | | 16 |
| 000086-73-7 | FLUORENE | | | | | | 5 | | 5 |
| HZ0800-09-T | FOOD WASTE | | | | | | 1 | | 1 |
| HZ0900-25-T | FRIABLE ASBESTOS | | | | | 1 | | | 1 |
| 000076-44-8 | HEPTACHLOR | | | | | | 4 | 1 | 5 |
| 001024-57-3 | HEPTACHLOR EPOXIDE | | | 4 | | | 5 | | 9 |
| 000087-68-3 | HEXACHLOROBUTADIENE | | | | | | 2 | | 2 |
| 000319-84-6 | HEXACHLOROCYCLOHEXANE, ALPHA- | | | | | 1 | 4 | 1 | 6 |
| 000319-85-7 | HEXACHLOROCYCLOHEXANE, BETA- | | | | | | 2 | | 2 |
| 000319-86-8 | HEXACHLOROCYCLOHEXANE, DELTA- | | | | | | 4 | | 4 |
| 000058-89-9 | HEXACHLOROCYCLOHEXANE, GAMMA- | | | | | 1 | 5 | 1 | 7 |
| HZ1000-01-T | HYDROCARBONS, UNSPECIFIED | | | | | | 2 | 2 | 4 |
| 007647-01-0 | HYDROCHLORIC ACID | | 2 | | | | | | 2 |
| 007664-39-3 | HYDROGEN FLUORIDE | | 2 | | | | | | 2 |
| 000193-39-5 | INDENO(1,2,3-CD)PYRENE | | | | | 2 | 15 | | 17 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 007439-89-6 | IRON | | | | | 1 | 4 | 4 | 9 |
| 001332-37-2 | IRON OXIDE | | | | | 1 | | | 1 |
| 001305-78-8 | LIME | | | | | 1 | 1 | 1 | 3 |
| 007439-95-4 | MAGNESIUM | | | 1 | | | 1 | 2 | 4 |
| 007439-96-5 | MANGANESE | | | | | 3 | 26 | 14 | 43 |
| HZ0900-01-T | METALS N.O.S. | | | 1 | | | 5 | 4 | 10 |
| 000072-43-5 | METHOXYCHLOR | | | | | | 5 | | 5 |
| 000099-87-6 | METHYL-4-(1-METHYLETHYL)BENZENE | | | | | | 1 | | 1 |
| 000075-09-2 | METHYLENE CHLORIDE | | | | | | 2 | 4 | 6 |
| 000091-20-3 | NAPHTHALENE | | | | | 1 | 12 | 1 | 14 |
| 007440-02-0 | NICKEL | | | 3 | | 6 | 19 | 7 | 35 |
| 000086-30-6 | N-NITROSODIPHENYLAMINE | | | | | | 2 | 1 | 3 |
| 000103-65-1 | N-PROPYL BENZENE | | | | | | 5 | | 5 |
| 029082-74-4 | OCTACHLOROSTYRENE | | | 2 | | | | | 2 |
| HZ0700-09-T | ORGANOBROMINES, UNSPECIFIED | | | 1 | | | | | 1 |
| HZ1500-03-T | PAHS (NON-CARCINOGENIC) | | | | | | 1 | 3 | 4 |
| HZ2100-16-T | PARTICULATES | | 2 | 1 | | | 1 | 1 | 5 |
| 000087-86-5 | PENTACHLOROPHENOL | | | | | | 1 | 2 | 3 |
| 000085-01-8 | PHENANTHRENE | | | 1 | | | 20 | 1 | 22 |
| 000108-95-2 | PHENOL | | | | | | 4 | | 4 |
| 130498-29-2 | POLYCYCLIC AROMATIC HYDROCARBONS | | | | | | 4 | | 4 |
| HZ1000-51-T | POLYCYCLIC ORGANIC MATTER | | | | | | 1 | 1 | 2 |
| 000129-00-0 | PYRENE | | | | | | 15 | | 15 |
| 007782-49-2 | SELENIUM | | | | | 3 | 14 | 4 | 21 |
| HZ1900-02-T | SEMIVOLATILE ORGANIC COMPOUNDS N.O.S. | | | | | | 1 | | 1 |
| 007440-22-4 | SILVER | | | | | 4 | 14 | 3 | 21 |
| 007440-23-5 | SODIUM | | | | | | 4 | 2 | 6 |
| 000100-42-5 | STYRENE | | | | | 1 | 2 | | 3 |
| HZ0400-03-T | TCDD EQUIVALENTS | | | 1 | | | | | 1 |
| 000127-18-4 | TETRACHLOROETHYLENE | | | | | | 3 | | 3 |
| 007440-28-0 | THALLIUM | | | | | 1 | 18 | 2 | 21 |
| 000108-88-3 | TOLUENE | | | | | 2 | 7 | 1 | 10 |
| HZ2100-13-T | TOTAL SUSPENDED PARTICULATES (TSP) | | 1 | | | | | | 1 |
| 005103-74-2 | TRANS-CHLORDANE | | | | | | 10 | | 10 |
| 000079-01-6 | TRICHLOROETHYLENE | | | | | | 4 | 4 | 8 |
| 007440-62-2 | VANADIUM | | | | | 2 | 22 | 7 | 31 |
| 000075-01-4 | VINYL CHLORIDE | | | | | | | 2 | 2 |
| HZ1900-01-T | VOLATILE ORGANIC COMPOUNDS N.O.S. | | 2 | 1 | | | 1 | | 4 |
| 001330-20-7 | XYLENES, TOTAL | | | | | 2 | 7 | | 9 |
| 007440-66-6 | ZINC | | | 3 | | 8 | 29 | 13 | 53 |
| 000132-64-9 | DIBENZOFURAN | | | | | | 12 | | 12 |
| MEDEXP-00-0 | | | 9 | 9 | 1 | 10 | 20 | 27 | 76 |
| | | | 2 | 3 | | | 6 | 4 | 15 |
| | | **Total Non-IJC** | **27** | **39** | **1** | **119** | **931** | **227** | **1344** |

## Table 3.8-D Tri Releases (in pounds, 2001) for the Rouge River AOC

| Chemical | IJC Tracking Number | Total Air Emissions | Surface Water Discharges | Under-ground Injection | Releases to Land | Total Onsite Releases | Total Offsite Releases | Total On- and Offsite Releases |
|---|---|---|---|---|---|---|---|---|
| POLYCHLORINATED BIPHENYLS | 1 | 95 | 0 | 0 | 1247638 | 1247733 | 1974 | 1249707 |
| DIOXIN AND DIOXIN-LIKE COMPOUNDS | 2 | 0.003542994 | 0 | 0 | 0.0001764 | 0.003719394 | 0.0001764 | 0.003895794 |
| *(PCDDs and PCDFs)* | 3 | | | | | | | |
| LEAD | 8 | 490.28628 | 1 | 0 | 6 | 497.28628 | 26664.5571 | 27161.84338 |
| LEAD COMPOUNDS | 8 | 18281.872 | 1036.8 | 0 | 405710.3 | 425028.972 | 961000.165 | 1386029.137 |
| MERCURY | 9 | 354.9 | 0 | 0 | 0 | 354.9 | 877.4 | 1232.3 |
| MERCURY COMPOUNDS | 9 | 428.633 | 0.003 | 0 | 13492.8 | 13921.436 | 6163.2 | 20084.636 |
| TOXAPHENE | 10 | 39 | 0 | 0 | 1690 | 1729 | 825 | 2554 |
| HEXACHLOROBENZENE | 11 | 98 | 0 | 0 | 4189 | 4287 | 2467 | 6754 |
| | **Total IJC** | **19787.6948** | **1037.803** | **0** | **1672726.1** | **1693551.598** | **999971.3223** | **2693522.92** |
| 1,1-DICHLORO-1-FLUOROETHANE | | 3491 | 0 | 0 | 0 | 3491 | 250 | 3741 |
| 1,2,3-TRICHLOROPROPANE | | 282 | 0 | 0 | 12084 | 12366 | 5887 | 18253 |
| 1,2,4-TRICHLOROBENZENE | | 180 | 0 | 0 | 7710 | 7890 | 3757 | 11647 |
| 1,2,4-TRIMETHYLBENZENE | | 430903 | 0 | 0 | 0 | 430903 | 296 | 431199 |
| 1,2-DIBROMOETHANE | | 50 | 0 | 0 | 0 | 50 | 0 | 50 |
| 1,2-DICHLOROETHANE | | 250 | 0 | 0 | 0 | 250 | 0 | 250 |
| 1,2-DICHLOROPROPANE | | 144 | 0 | 0 | 6529 | 6673 | 3180 | 9853 |
| 1,3-BUTADIENE | | 1390 | 0 | 0 | 0 | 1390 | 0 | 1390 |
| 1,4-DIOXANE | | 1469 | 0 | 0 | 60633 | 62102 | 29549 | 91651 |
| 2,4-DINITROPHENOL | | 1566 | 0 | 0 | 65046 | 66612 | 31712 | 98324 |
| 2,4-DINITROTOLUENE | | 1381 | 0 | 0 | 57203 | 58584 | 27871 | 86455 |
| 2,6-DINITROTOLUENE | | 229 | 0 | 0 | 9959 | 10188 | 4850 | 15038 |
| 2-ACETYLAMINO-FLUORENE | | 1195 | 0 | 0 | 49468 | 50663 | 29128 | 79791 |
| 2-CHLORO-1,1,1,2-TETRAFLUOROETHANE | | 28416 | 0 | 0 | 0 | 28416 | 0 | 28416 |
| 4,6-DINITRO-O-CRESOL | | 1359 | 0 | 0 | 56960 | 58319 | 33291 | 91610 |
| 4-NITROPHENOL | | 273 | 0 | 0 | 11712 | 11985 | 5704 | 17689 |
| 5-NITRO-O-TOLUIDINE | | 229 | 0 | 0 | 9959 | 10188 | 4850 | 15038 |
| ACRYLAMIDE | | 212 | 0 | 0 | 9035 | 9247 | 4402 | 13649 |
| ACRYLONITRILE | | 1342 | 5 | 0 | 34014 | 35361 | 19976 | 55337 |
| ALUMINUM (FUME OR DUST) | | 2765 | 5 | 0 | 0 | 2770 | 18211 | 20981 |
| ALUMINUM OXIDE (FIBROUS FORMS) | | 0 | 0 | 0 | 11515 | 11515 | 2803 | 14318 |
| AMMONIA | | 211276 | 9433 | 0 | 0 | 220709 | 9358 | 230067 |
| ANTHRACENE | | 4317 | 0 | 0 | 0 | 4317 | 0 | 4317 |
| ANTIMONY | | 88 | 7200 | 0 | 0 | 7288 | 327150 | 334438 |
| ANTIMONY COMPOUNDS | | 0 | 0 | 0 | 35010 | 35010 | 10994 | 46004 |
| ARSENIC COMPOUNDS | | 0 | 0 | 0 | 2339396 | 2339396 | 1156116 | 3495512 |
| ASBESTOS (FRIABLE) | | 0 | 0 | 0 | 137504 | 137504 | 21683 | 159187 |
| BARIUM | | 0 | 0 | 0 | 0 | 0 | 96500 | 96500 |
| BARIUM COMPOUNDS | | 112907 | 2283 | 0 | 90151 | 205341 | 1136062 | 1341403 |
| BENZENE | | 87323 | 120 | 0 | 11829 | 99272 | 5826 | 105098 |
| BENZO(G,H,I)PERYLENE | | 639.655761 | 0 | 0 | 1089 | 1728.655761 | 636.1001 | 2364.755861 |
| BERYLLIUM COMPOUNDS | | 0 | 0 | 0 | 14185 | 14185 | 391 | 14576 |
| BIPHENYL | | 1229 | 0 | 0 | 0 | 1229 | 0 | 1229 |
| BROMOMETHANE | | 141 | 0 | 0 | 6036 | 6177 | 2941 | 9118 |
| BUTYRALDEHYDE | | 7808 | 0 | 0 | 0 | 7808 | 37 | 7845 |
| CADMIUM COMPOUNDS | | 750 | 0 | 0 | 72994 | 73744 | 351920 | 425664 |
| CERTAIN GLYCOL ETHERS | | 957900 | 0 | 0 | 0 | 957900 | 41613 | 999513 |
| CHLORDANE | | 5 | 0 | 0 | 277 | 282 | 219 | 501 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CHLORINE | | 1934 | 328 | 0 | 0 | 2262 | 0 | 2262 |
| CHLOROMETHANE | | 283 | 0 | 0 | 12120 | 12403 | 5905 | 18308 |
| CHLOROPHENOLS | | 151 | 0 | 0 | 6364 | 6515 | 3097 | 9612 |
| CHROMIUM | | 256 | 33 | 0 | 0 | 289 | 30133 | 30422 |
| CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION) | | 1780 | 264 | 0 | 325546 | 327590 | 556647 | 884237 |
| COBALT COMPOUNDS | | 250 | 5 | 0 | 0 | 255 | 5 | 260 |
| COPPER | | 5884 | 260 | 0 | 8 | 6152 | 37276 | 43428 |
| COPPER COMPOUNDS | | 961 | 2292 | 0 | 56804 | 60057 | 215557 | 275614 |
| CREOSOTE | | 5787 | 0 | 0 | 0 | 5787 | 0 | 5787 |
| CRESOL (MIXED ISOMERS) | | 1312 | 0 | 0 | 0 | 1312 | 0 | 1312 |
| CUMENE | | 6666 | 0 | 0 | 0 | 6666 | 5 | 6671 |
| CYANIDE COMPOUNDS | | 505 | 0 | 0 | 8045 | 8550 | 3405 | 11955 |
| CYCLOHEXANE | | 52195 | 0 | 0 | 0 | 52195 | 0 | 52195 |
| DI(2-ETHYLHEXYL) PHTHALATE | | 374 | 0 | 0 | 14950 | 15324 | 7553 | 22877 |
| DIAMINOTOLUENE (MIXED ISOMERS) | | 8 | 90 | 0 | 5 | 103 | 0 | 103 |
| DIBENZOFURAN | | 6022 | 0 | 0 | 0 | 6022 | 0 | 6022 |
| DIBUTYL PHTHALATE | | 372 | 0 | 0 | 15711 | 16083 | 7662 | 23745 |
| DICHLOROMETHANE | | 26866 | 0 | 0 | 13652 | 40518 | 6650 | 47168 |
| DIETHANOLAMINE | | 4123 | 0 | 0 | 0 | 4123 | 0 | 4123 |
| DIISOCYANATES | | 1576 | 0 | 0 | 33275 | 34851 | 52956 | 87807 |
| DIMETHYL PHTHALATE | | 291 | 0 | 0 | 12366 | 12657 | 6027 | 18684 |
| DIMETHYLAMINE | | 1135 | 128 | 0 | 0 | 1263 | 0 | 1263 |
| ETHYLBENZENE | | 337881 | 2 | 50 | 13003 | 350936 | 6599 | 357535 |
| ETHYLENE | | 82199 | 0 | 0 | 0 | 82199 | 0 | 82199 |
| ETHYLENE GLYCOL | | 13893 | 23200 | 0 | 119538 | 156631 | 292823 | 449454 |
| ETHYLENE OXIDE | | 7083 | 240 | 0 | 11 | 7334 | 0 | 7334 |
| FORMALDEHYDE | | 300 | 0 | 0 | 0 | 300 | 0 | 300 |
| FREON 113 | | 349 | 0 | 0 | 15165 | 15514 | 7384 | 22898 |
| HEPTACHLOR | | 0 | 0 | 0 | 23 | 23 | 0 | 23 |
| HEXACHLOROETHANE | | 542 | 0 | 0 | 12560 | 13102 | 6120 | 19222 |
| HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY) | | 3871400 | 0 | 0 | 0 | 3871400 | 0 | 3871400 |
| HYDROGEN FLUORIDE | | 237010 | 0 | 0 | 0 | 237010 | 0 | 237010 |
| ISODRIN | | 0 | 0 | 0 | 19 | 19 | 15 | 34 |
| ISOPROPYL ALCOHOL (MANUFACTURING, STRONG-ACID PROCESS ONLY,NO SUPPLIER) | | 250 | 0 | 0 | 0 | 250 | 3559 | 3809 |
| MALEIC ANHYDRIDE | | 19 | 0 | 0 | 0 | 19 | 0 | 19 |
| MANGANESE | | 2027 | 33 | 0 | 0 | 2060 | 15529 | 17589 |
| MANGANESE COMPOUNDS | | 15399 | 1588 | 0 | 112364 | 129351 | 3497278 | 3626629 |
| METHACRYLONITRILE | | 50 | 0 | 0 | 0 | 50 | 0 | 50 |
| METHANOL | | 213913 | 5 | 0 | 5 | 213923 | 104 | 214027 |
| METHYL ETHYL KETONE | | 175935 | 0 | 0 | 22559 | 198494 | 18968 | 217462 |
| METHYL IODIDE | | 532 | 0 | 0 | 23136 | 23668 | 11267 | 34935 |
| METHYL ISOBUTYL KETONE | | 266696 | 0 | 0 | 17568 | 284264 | 9322 | 293586 |
| METHYL METHACRYLATE | | 1559 | 0 | 0 | 64735 | 66294 | 31535 | 97829 |
| METHYL TERT-BUTYL ETHER | | 147376 | 0 | 0 | 0 | 147376 | 10 | 147386 |
| NAPHTHALENE | | 29917 | 0 | 0 | 17710 | 47627 | 4560 | 52187 |
| N-BUTYL ALCOHOL | | 751522 | 18828 | 0 | 0 | 770350 | 10 | 770360 |
| N-HEXANE | | 88473 | 0 | 0 | 0 | 88473 | 51 | 88524 |
| NICKEL | | 7262 | 36 | 0 | 0 | 7298 | 32019 | 39317 |
| NICKEL COMPOUNDS | | 5883 | 443 | 0 | 3959913 | 3966239 | 2151900 | 6118139 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NITRATE COMPOUNDS | | 267 | 110000 | 0 | 0 | 110267 | 639367 | 749634 |
| NITRIC ACID | | 3767 | 0 | 0 | 9947 | 13714 | 58031 | 71745 |
| NITROBENZENE | | 152 | 0 | 0 | 6469 | 6621 | 3151 | 9772 |
| N-METHYL-2-PYRROLIDONE | | 306052 | 5 | 0 | 14361 | 320418 | 25222 | 345640 |
| N-NITROSODIETHYLAMINE | | 229 | 0 | 0 | 9959 | 10188 | 0 | 10188 |
| N-NITROSOPIPERIDINE | | 286 | 0 | 0 | 12453 | 12739 | 6065 | 18804 |
| P-CHLOROANILINE | | 203 | 0 | 0 | 17425 | 17628 | 8513 | 26141 |
| PHENANTHRENE | | 1941 | 0 | 0 | 0 | 1941 | 0 | 1941 |
| PHENOL | | 3134 | 0 | 0 | 12243 | 15377 | 26056 | 41433 |
| PHTHALIC ANHYDRIDE | | 453 | 0 | 0 | 27546 | 27999 | 13447 | 41446 |
| P-NITROANILINE | | 229 | 0 | 0 | 9959 | 10188 | 4850 | 15038 |
| POLYCHLORINATED ALKANES | | 0 | 0 | 0 | 0 | 0 | 740 | 740 |
| POLYCYCLIC AROMATIC COMPOUNDS | | 18539.30174 | 0 | 0 | 15169.8 | 33709.10174 | 11485.5 | 45194.60174 |
| PROPYLENE | | 73880 | 0 | 0 | 0 | 73880 | 0 | 73880 |
| PROPYLENE OXIDE | | 311 | 240 | 0 | 51 | 602 | 0 | 602 |
| PYRIDINE | | 187 | 0 | 0 | 8274 | 8461 | 4032 | 12493 |
| QUINOLINE | | 1674 | 0 | 0 | 0 | 1674 | 0 | 1674 |
| SAFROLE | | 180 | 0 | 0 | 7821 | 8001 | 3809 | 11810 |
| SEC-BUTYL ALCOHOL | | 480 | 5 | 0 | 1 | 486 | 0 | 486 |
| SELENIUM | | 0 | 0 | 0 | 2552938 | 2552938 | 1247917 | 3800855 |
| SILVER | | 0 | 0 | 0 | 64523 | 64523 | 31529 | 96052 |
| SODIUM DICAMBA | | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| SODIUM DIMETHYLDITHIO-CARBAMATE | | 203 | 0 | 0 | 17425 | 17628 | 8513 | 26141 |
| SODIUM NITRITE | | 1262 | 0 | 0 | 5 | 1267 | 322 | 1589 |
| STYRENE | | 15913 | 240 | 0 | 5 | 16158 | 870 | 17028 |
| SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY) | | 309917 | 0 | 0 | 0 | 309917 | 0 | 309917 |
| TERT-BUTYL ALCOHOL | | 307 | 0 | 0 | 0 | 307 | 0 | 307 |
| TETRACHLORO-ETHYLENE | | 382 | 0 | 0 | 0 | 382 | 0 | 382 |
| TOLUENE | | 535035 | 9 | 0 | 13384 | 548428 | 12353 | 560781 |
| TOLUENE DIISOCYANATE (MIXED ISOMERS) | | 338.5 | 0 | 0 | 18 | 356.5 | 0 | 356.5 |
| TOLUENE-2,4-DIISOCYANATE | | 10 | 0 | 0 | 0 | 10 | 0 | 10 |
| TRANS-1,3-DICHLOROPROPENE | | 147 | 0 | 0 | 6372 | 6519 | 3115 | 9634 |
| TRICHLORFON | | 235 | 0 | 0 | 8313 | 8548 | 5251 | 13799 |
| TRICHLOROETHYLENE | | 11611 | 0 | 0 | 11949 | 23560 | 6254 | 29814 |
| TRICHLOROFLUORO-METHANE | | 365 | 0 | 0 | 15568 | 15933 | 7571 | 23504 |
| TRIETHYLAMINE | | 27855 | 3104 | 0 | 0 | 30959 | 1500 | 32459 |
| URETHANE | | 1000 | 0 | 0 | 0 | 1000 | 24018 | 25018 |
| VANADIUM (EXCEPT WHEN CONTAINED IN AN ALLOY) | | 58 | 0 | 0 | 0 | 58 | 10095 | 10153 |
| VANADIUM COMPOUNDS | | 235 | 157 | 0 | 2968 | 3360 | 78003 | 81363 |
| VINYL ACETATE | | 27569 | 0 | 0 | 0 | 27569 | 0 | 27569 |
| VINYLIDENE CHLORIDE | | 250 | 0 | 0 | 0 | 250 | 0 | 250 |
| XYLENE (MIXED ISOMERS) | | 1874810 | 0 | 50 | 44538 | 1919398 | 22257 | 1941655 |
| ZINC (FUME OR DUST) | | 757 | 0 | 0 | 249242 | 249999 | 33827 | 283826 |
| ZINC COMPOUNDS | | 139458 | 8491 | 0 | 14622 | 162571 | 26293044 | 26455615 |
| | **Total Non-IJC** | **11597393.46** | **189072** | **100** | **11141001.8** | **22927567.26** | **39000301.6** | **61927868.86** |
| | **Total** | **11617181.15** | **190109.80** | **100** | **12813727.9** | **24621118.86** | **40000272.92** | **64621391.78** |

**Table 3.8-E TRI Facilities Releasing IJC Critical Pollutants Onsite for the Rouge River AOC**

| IJC Critical Pollutant | Number of Facilities | Facility Name | TRIF ID | City |
|---|---|---|---|---|
| **Polychlorinated biphenyls** | **1** | | | |
| Wayne County, MI | 1 | WAYNE DISPOSAL INC. | 48111WYNDS49350 | BELLEVILLE |
| **Dioxin and dioxin-like compounds *(PCDDs and PCDFs)*** | **6** | | | |
| Wayne County, MI | 6 | CARMEUSE LIME | 48218DTRTL25MAR | RIVER ROUGE |
| | | CARMEUSE LIME INC. | 48217DTRTL310FO | DETROIT |
| | | DETROIT EDISON RIVER ROUGE POWER PLANT | 48218DTRTD1BELA | RIVER ROUGE |
| | | DETROIT EDISON-TRENTON CHANNEL POWER PLANT | 48183DTRTD4695W | TRENTON |
| | | GMC MLCG HAMTRAMCK ASSEMBLY | 48211CDLLC2500E | DETROIT |
| | | MARATHON ASHLAND PETROLEUM L.L.C. | 48217MRTHN1300S | DETROIT |
| **Lead and lead compounds** | **31** | | | |
| Oakland County, MI | 7 | AKZO NOBEL COATINGS INC. | 48053KZCTN30BRU | PONTIAC |
| | | AKZO NOBEL COATINGS INC. CAR REFINISHES & DECORATIVE COAT. | 48341KZCTN2527B | PONTIAC |
| | | CONTINENTAL ALUMINUM | 48165CNTNN29201 | NEW HUDSON |
| | | DEBRON INDL. ELECTRONICS INC. | 48083DBRNN591EX | TROY |
| | | EATON CORP. | 48308TNCRP1400S | ROCHESTER HILLS |
| | | GM MCG ORION ASSEMBLY | 48055GNRLM4555G | ORION |
| | | GM PONTIAC ASSEMBLY CENTER | 48058GMCTR820OP | PONTIAC |
| Wayne County, MI | 24 | AUTOALLIANCE INTL. INC. | 48134MZDMT1MAZD | FLAT ROCK |
| | | CARMEUSE LIME | 48218DTRTL25MAR | RIVER ROUGE |
| | | CARMEUSE LIME INC. | 48217DTRTL310FO | DETROIT |
| | | DCI AEROTECH | 48238DCRTC7515L | DETROIT |
| | | DETROIT EDISON RIVER ROUGE POWER PLANT | 48218DTRTD1BELA | RIVER ROUGE |
| | | DETROIT EDISON-TRENTON CHANNEL POWER PLANT | 48183DTRTD4695W | TRENTON |
| | | FORD MOTOR CO. DEARBORN ASSEMBLY PLANT | 48121FRDM23001M | DEARBORN |
| | | FORD MOTOR CO. LIVONIA TRANSMISSION PLANT | 48150FRDMT36200 | LIVONIA |
| | | FORD MOTOR CO. MICHIGAN TRUCK PLANT | 48184FRDMT38303 | WAYNE |
| | | FORD MOTOR CO. WAYNE ASSEMBLY | 48184FRDMT37625 | WAYNE |
| | | FORD MOTOR CO. WAYNE INTEGRAL STAMPING | 48184FRDMT37500 | WAYNE |
| | | GM PT ROMULUS ENGINE | 48174GMCCP36880 | ROMULUS |
| | | GMC MLCG HAMTRAMCK ASSEMBLY | 48211CDLLC2500E | DETROIT |
| | | MARATHON ASHLAND PETROLEUM L.L.C. | 48217MRTHN1300S | DETROIT |
| | | MCLAREN PERFORMANCE TECHS. | 48152MCLRN32233 | LIVONIA |
| | | NATIONAL STEEL CORP. GREATLAKES OPS. | 48229GRTLKNO1QU | ECORSE |
| | | PERMA-FIX OF MICHIGAN INC. | 48192PRMFX18550 | BROWNSTOWN |
| | | ROUGE STEEL CO. | 48121RGSTL3001M | DEARBORN |
| | | TOWER AUTOMOTIVE PRODS. CO. INC. | 48170TWRTM43955 | PLYMOUTH |
| | | UNISTRUT CORP. | 48184NSTRT35660 | WAYNE |
| | | UNITED STATES GYPSUM CO. DETROIT PLANT | 48218NTDST2DIVI | RIVER ROUGE |

| IJC Critical Pollutant | Number of Facilities | Facility Name | TRIF ID | City |
|---|---|---|---|---|
| | | VOIGHT & SCHWEITZER GALVANIZERS INC. | 48239GLVNZ25425 | REDFORD |
| | | WAYNE DISPOSAL INC. | 48111WYNDS49350 | BELLEVILLE |
| | | WYANDOTTE DEPARTMENT OF MUNICIPAL SERVICES | 48192WYNDT2555V | WYANDOTTE |
| **Mercury and mercury compounds** | **12** | | | |
| Oakland County, MI | 1 | GM MCG ORION ASSEMBLY | 48055GNRLM4555G | ORION |
| Wayne County, MI | 11 | CARMEUSE LIME | 48218DTRTL25MAR | RIVER ROUGE |
| | | CARMEUSE LIME INC. | 48217DTRTL310FO | DETROIT |
| | | DETROIT EDISON RIVER ROUGE POWER PLANT | 48218DTRTD1BELA | RIVER ROUGE |
| | | DETROIT EDISON-TRENTON CHANNEL POWER PLANT | 48183DTRTD4695W | TRENTON |
| | | MARATHON ASHLAND PETROLEUM L.L.C. | 48217MRTHN1300S | DETROIT |
| | | NATIONAL STEEL CORP. GREATLAKES OPS. | 48229GRTLKNO1QU | ECORSE |
| | | PERMA-FIX OF MICHIGAN INC. | 48192PRMFX18550 | BROWNSTOWN |
| | | ROUGE STEEL CO. | 48121RGSTL3001M | DEARBORN |
| | | UNITED STATES GYPSUM CO. DETROIT PLANT | 48218NTDST2DIVI | RIVER ROUGE |
| | | WAYNE DISPOSAL INC. | 48111WYNDS49350 | BELLEVILLE |
| | | WYANDOTTE DEPARTMENT OF MUNICIPAL SERVICES | 48192WYNDT2555V | WYANDOTTE |
| **Toxaphene** | **1** | | | |
| Wayne County, MI | 1 | WAYNE DISPOSAL INC. | 48111WYNDS49350 | BELLEVILLE |
| | | | | |
| **Hexachlorobenzene** | **1** | | | |
| Wayne County, MI | 1 | WAYNE DISPOSAL INC. | 48111WYNDS49350 | BELLEVILLE |

**Table 3.8-F NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, Rouge River AOC**

| Chemical | IJC Tracking Number | Discharge |
|---|---|---|
| OLYCHLORINATED BIPHENYLS (PCBS) | 1 | 0.08 |
| LEAD, TOTAL (AS PB) | 8 | 5530.46 |
| MERCURY, TOTAL (AS HG) | 9 | 102.36 |
| | **Total IJC** | **5632.90** |
| BARIUM, TOTAL (AS BA) | | 1237.35 |
| BENZOIC ACIDS-TOTAL | | 3.65 |
| BORON, TOTAL (AS B) | | 80300 |
| CADMIUM, TOTAL (AS CD) | | 292 |
| COPPER, TOTAL (AS CU) | | 7169.70 |
| CYANIDE, TOTAL (AS CN) | | 9490 |
| CYANIDE, FREE (AMEN. TO CHLORINATION) | | 266.45 |
| HYDROGEN SULFIDE | | 0.62 |
| NITROGEN, AMMONIA TOTAL (AS N) | | 601759.68 |
| OCTYLPHENOL | | 73 |
| P-CRESOL | | 1.10 |
| PHENOLS | | 1388.10 |
| PHOSPHORUS, TOTAL (AS P) | | 3945760.72 |
| SELENIUM, TOTAL (AS SE) | | 146 |
| SILVER, TOTAL (AS AG) | | 10.59 |
| STRONTIUM,TOTAL (AS SR) | | 4653.75 |
| TERPINEOL-ALPHA | | 1.10 |
| THALLIUM, TOTAL (AS TL) | | 18.25 |
| ZINC, TOTAL (AS ZN) | | 7403.01 |
| | **Total Non-IJC** | **4659975.07** |
| | **Total** | **4665607.97** |

**Table 3.8-G NPDES Facilities Permitted to Discharge IJC Critical Pollutants, Rouge River AOC**

| IJC Critical Pollutant | Number of Facilities | Facility Name | NPDES | City |
|---|---|---|---|---|
| **Polychlorinated Biphenyls (PCBs)** | **2** | | | |
| Wayne County, MI | 1 | DETROIT WWTP | MI0022802 | DETROIT |
| Oakland County, MI | 1 | GM-PONTIAC NORTH CAMPUS | MI0056031 | PONTIAC |
| **Lead** | **5** | | | |
| Wayne County, MI | 5 | DSC LTD-GIBRALTAR | MI0004227 | GIBRALTAR |
| | | DSC-TRENTON PLANT | MI0002399 | TRENTON |
| | | ROUGE STEEL CO | MI0043524 | DEARBORN |
| | | UNITED STATES STEEL-ECORSE | MI0002313 | ECORSE |
| | | UNITED STATES STEEL-ZUG ISLAND | MI0026786 | RIVER ROUGE |
| **Mercury** | **9** | | | |
| Wayne County, MI | 9 | BASF-WYANDOTTE | MI0000540 | WYANDOTTE |
| | | DECO-RIVER ROUGE PLT | MI0001724 | RIVER ROUGE |
| | | DECO-SIBLEY QUARRY | MI0001953 | TRENTON |
| | | DETROIT WWTP | MI0022802 | DETROIT |
| | | GROSSE ILE TWP WWTP | MI0026191 | GROSSE ILE |
| | | S HURON VALLEY UA WWTP | MI0043800 | ROCKWOOD |
| | | TRENTON WWTP | MI0021164 | TRENTON |
| | | WAYNE CO-WYANDOTTE WWTP | MI0021156 | WYANDOTTE |
| | | WYANDOTTE ELECTRIC PLANT & WFP | MI0038105 | WYANDOTTE |

## 3.9 CLINTON RIVER AOC, OAKLAND AND MACOMB COUNTIES, MI

The Clinton River, just north of Detroit in southeastern Michigan, flows into Lake St. Clair near the city of Mt. Clemens. The Clinton River AOC includes the Clinton River watershed, primarily in Oakland and Macomb Counties. Lake St. Clair is located between Lake Huron and Lake Erie, and is connected to Lake Erie by the Detroit River. The direction of flow is towards Lake Erie. About half of the Clinton River's flow is treated wastewater from six municipal wastewater treatment plants.

### 3.9.1 Hazardous Waste Sites Relevant to the Clinton River AOC

ATSDR has evaluated the data for hazardous waste sites in Oakland and Macomb Counties, MI, and reached conclusions regarding the public health threat posed by these sites. These conclusions, along with information regarding the type and location of the site, and the date and type of assessment document, are summarized in Tables 3.9-A (Oakland County, from Section 3.9.1 Rouge River Area of Concern) and Table 3.9-B (Macomb County), for sites that had public heath hazard Categories of 1-3 at some point during their assessment history. Oakland County is relevant to both the Rouge River AOC and the Clinton River AOC. The table for Oakland County is repeated here for convenience.

**Table 3.9-A Hazardous Waste Sites in Oakland County, MI**

| Site Name | Public Health Hazard Category | EPA NPL Status | Site ID | City |
|---|---|---|---|---|
| Cemetery Dump | 3 (1988 HA)<br>4 (1992 HA) | Deleted Post SARA | MID980794663 | Rose Center |
| Continental Aluminum Corp. | 3 (2003 HC) | Non NPL | MI0001941699 | New Hudson |
| Hi-Mill Manufacturing Co. | 3 (1991 HA) | Final | MID005341714 | Highland |
| J & L Landfill | 3 (1989 HA)<br>4 (1993 HA)<br>5 (n.d. SR) | Final | MID980609440 | Rochester Hills |
| Rose Township Dump | 3 (1988 HA) | Final | MID980499842 | Rose Township |
| Springfield Township Dump | 3 (1988 HA) | Final | MID980499966 | Davisburg |

3 = Indeterminate Public Health Hazard, 4 = No Apparent Public Health Hazard, 5 = No Public Health Hazard
HA = Public Health Assessment, HC = Health Consultation, SR = Site Review and Update
n.d. = no date provided

**Table 3.9-B Hazardous Waste Sites in Macomb County, MI**

| Site Name | Public Health Hazard Category | EPA NPL Status | Site ID | City |
|---|---|---|---|---|
| G & H Landfill | 3 (1989 HA)<br>3 (1992 HA) | Final | MID980410823 | Utica |
| Liquid Disposal, Ind. | 3 (1987 HA)<br>3 (n.d. SR) | Final | MID067340711 | Utica |
| South Macomb Disposal Authority | 3 (1989 HA)<br>2 (1995 HA) | Final | MID069826170 | Macomb Township |

2 = Public Health Hazard, 3 = Indeterminate Public Health Hazard
HA = Public Health Assessment, SR = Site Review and Update
n.d. = no date provided

For hazardous waste sites in Oakland and Macomb Counties (combined) that at any time had Public Health Hazard Categories of 1-3, the number of contaminant records in HazDat that exceeded health based-screening values was 926, as shown in Table 3.9-C. Most of the records were for the water media group; the soil media group had the next highest number of records.

The IJC Great Lakes critical pollutants accounted for 143 (15%) of these records. The IJC records were most numerous for the soil and water media groups. The IJC critical pollutants that have been found at Oakland County and Macomb County hazardous waste sites at concentrations exceeding health-based screening values are: PCBs, TCDD, B(A)P, DDT and metabolites, aldrin/dieldrin, lead, mercury, and hexachlorobenzene. Details are provided in Table 3.9-D.

Further evaluation of the data for the sites with Public Health Hazard Categories of 1-3 was conducted by ATSDR in the Public Health Assessment and other health-related documents listed in the table. The evaluations for Oakland County, MI were already discussed in Sections 3.8.11 through 3.8.16. The evaluations for waste sites in Macomb County are discussed in the following subsections.

#### 3.9.1.1 G & H Landfill

The G & H Landfill is an approximately 70-acre site located in Shelby Township, Macomb County, MI, between the cities of Utica and Rochester. The landfill was a waste oil recovery facility from 1955 to 1967, and also was used as an industrial and municipal landfill from 1955 to 1974. Waste oil containing PCBs was dumped into unlined ponds, and waste solvents and paint sludges were landfilled along with municipal waste. The site is bordered by the Clinton River; groundwater flow is towards the river. The information regarding this site is taken from the 1989 and 1992 public health assessments conducted by ATSDR, and from the 2003 EPA NPL fact sheet for this site.

**Category of Public Health Hazard:** This site was categorized as an *Indeterminate Public Health Hazard* (Category 3) in a 1989 public health assessment by ATSDR because of the potential threat to human health from exposure to contaminants at concentrations that may result in adverse health effects. The 1992 public health assessment concluded that the conclusions drawn in the original assessment do not need to be changed.

**Contaminants of Concern in Completed Exposure Pathways:** None. Contaminants of concern included the IJC critical pollutants, PCBs and lead, and other contaminants such as VOCs, including the BTEXs and chlorinated VOCs, and PAHs (concentrations of B(a)P or carcinogenic PAHs were not reported). Exposure onsite was considered unlikely (except for remediation workers), because the site was fenced. The 1989 health assessment was concerned that nearby residents and business might be exposed through the use of contaminated groundwater for potable and non-potable purposes and through the consumption of fish and game from the Clinton River area, and that monitoring was not adequate to assess the potential hazard. Fish (carp) in the Clinton River have high PCB levels, but there are other sources of pollution in addition to the G & H Landfill. Additional monitoring data taken into account in the 1992 health assessment did not indicate the need for any significant change in these conclusions. Since that time, nearby residences and small businesses have been switched to the municipal water supply, and the site has undergone remediation through construction of a cap, a slurry wall,

and application of a groundwater extraction and treatment system, which will operate for at least 30 years (starting in 1999).

**Demographics:** Demographic profile, from the 2000 U.S. Census, for vulnerable populations living within one mile of this site:

| | |
|---|---|
| Children 6 years and younger | 594 |
| Females aged 15-44 | 1,455 |
| Adults 65 and older | 564 |

**Public Health Outcome Data:** A 1982 health outcome assessment that investigated infant mortality, low birth weight, age-adjusted death rates from cancer, heart disease, stroke, and accidents in Shelby Township (where the G & H Landfill is located) with State and County rates found that rates in Shelby Township were either comparable or lower than in the comparison populations.

**Conclusions:** This site may have contributed to the environmental burden of the IJC critical pollutants PCBs and lead, as well as other contaminants including VOCs, in the past. Remediation of the site aimed at physically and hydraulically containing the contaminants onsite has been instituted, which should minimize release of contaminants and exposure of humans.

#### 3.9.1.2 Liquid Disposal, Inc.

This former sand and gravel pit, located in Shelby Township, Macomb County, MI, is bordered by wetlands, the Clinton River, and an auto junkyard. It was used as a landfill from 1964 to 1968. From 1968 through 1982, the site was used as a liquid waste incineration facility for volatile and semi-volatile chemicals including paint thinners, sludges, contaminated oils, and greases. Wastes were stored in a lagoon, below- and above-ground tanks, and drums prior to incineration. As of 1987, the contents of the lagoons had been removed or stabilized, and the storage tanks and other containers were removed from the site; a crude leachate collection system was used with a sump pump to direct leachate back into the incinerator pit. Information regarding this site is taken from the 1987 ATSDR health assessment, HazDat, and the 2003 EPA NPL fact sheet for the site.

**Category of Public Health Hazard:** In the 1987 health assessment, this site was categorized as an *Indeterminate Public Health Hazard* (Category 3) because of the threat to human health from potential exposure to contaminants in soils and leachate in recreation areas near the site. A subsequent site review and update (not provided for inclusion in this document) reached the same conclusion regarding category of public health hazard.

**Contaminants of Concern in Completed Exposure Pathways:** None. Contaminants in onsite soil included the IJC critical pollutants PCBs and lead. Onsite groundwater contained the IJC critical pollutant aldrin and VOCs at above at above the health-based screening concentrations. Although onsite exposure was prevented by fencing, ATSDR was concerned about exposure of humans using nearby recreational areas, because of potential offsite migration of contaminants. More recently, the site has been remediated by solidification of highly contaminated soil and debris with concrete, construction of an underground slurry wall, clay cap, and extraction wells, and soil replacement and revegetation of wetlands and other adjoining areas. EPA has

determined that there is, as of 1998, no indication that contaminants are being released from the site.

**Demographics:** Demographic profile, from the 2000 U.S. Census, for vulnerable populations living within one mile of this site:

| | |
|---|---|
| Children 6 years and younger | 364 |
| Females aged 15-44 | 856 |
| Adults 65 and older | 477 |

**Public Health Outcome Data:** Not reported, but this site is located in Shelby Township, the subject of a 1982 public health outcome assessment summarized in Section 3.9.1. Conclusions were that rates of infant mortality and low birth weight, and age-adjusted death rates from cancer, heart disease, stroke, and accidents in Shelby Township were either comparable or lower than the State and County rates.

**Conclusions:** This site probably contributed to the environmental burden of the IJC critical pollutants PCBs, aldrin, and lead, as well as other contaminants including VOCs, in the past. It has been fenced and remediated, so that it is no longer releasing contaminants into the environment.

#### 3.9.1.3 South Macomb Disposal Authority

This approximately 159-acre site is located in Macomb Township, Macomb County, MI. It consists of two adjacent former municipal landfills. Approximately 680,000 cubic yards of municipal wastes were disposed of in one landfill, followed by approximately 1,200,000 cubic yards of wastes in the other landfill. Onsite groundwater and leachate are contaminated with organic and inorganic chemicals. The leachate formerly discharged from the landfill to McBride Drain, which flowed to the North Branch of the Clinton River. Information on this site is taken from the 1995 ATSDR public health assessment, HazDat, and the 2003 EPA NPL fact sheet.

**Category of Public Health Hazard:** In the 1989 health assessment, ATSDR categorized this site as an *Indeterminate Public Health Hazard* (Category 3). In the 1995 health assessment, ATSDR categorized this site as a *Public Health Hazard* (Category 2) because of exposures to contaminated environmental media have occurred, may potentially be occurring, and may occur in the future.

**Contaminants of Concern in Completed Exposure Pathways:** Contaminants present in residential wells at levels exceeding health based screening concentrations in 1983-1990 included the IJC critical pollutant lead (detected infrequently), as well as other contaminants including VOCs, ammonia, nitrates, cadmium, and arsenic. Comparison of estimated ingested doses or inhalation or dermal exposures (as appropriate depending on the chemical) with doses or exposures at which adverse health effects occur indicated that arsenic was present at levels associated with increased cancer risk. Thus, completed exposure pathways (ingestion, inhalation, and dermal exposure to residential well water) have occurred in the past. Bottled water was supplied to 12 residences during 1983-1988, and some residences were connected to the municipal water system in 1988, but as of 1995, about nine residences were not connected. Monitoring data did not indicate contamination of their wells through 1995, but future

contamination is a concern, as the leachate collection system reportedly does not capture the entire plume. Some leachate controls were in place, as well as a slurry wall on the north side to contain and collect contaminated groundwater. Additional remedial action was underway as of 2003.

**Demographics:** Demographic profile, from the 2000 U.S. Census, for vulnerable populations living within one mile of this site:

| | |
|---|---|
| Children 6 years and younger | 301 |
| Females aged 15-44 | 477 |
| Adults 65 and older | 89 |

**Public Health Outcome Data:** An ATSDR physician evaluated a "death survey" conducted by area residents. The data was considered insufficient due to the lack of information on the geographic boundaries of the survey, types of cancers, and important risk factors. The survey which did not provide any clear connections between reported adverse health effects (hepatitis and skin rash in one person and cirrhosis in another) and possible exposure to landfill contamination.

**Conclusions:** This site may have contributed to the environmental burden of the IJC critical pollutant lead, as well as other contaminants including VOCs, ammonia, cadmium, and nitrates. In addition, these contaminants were present in residential wells at levels exceeding health-based screening values. Some leachate controls were in place as of 1995, but did not capture the entire plume, so there is concern for future contamination of residential wells. Additional remedial action is underway. A death survey did not show sufficient evidence of health effects from contamination at the site.

### 3.9.2 TRI Data for the Clinton River AOC

The TRI onsite chemical releases for Oakland and Macomb Counties (combined) are summarized in Table 3.9-D. Total onsite releases in 2001 were 3,580,901 pounds, primarily released to air. Very little was released to surface water or land. Oakland County accounted for 76% and Macomb County accounted for 24% of the total onsite releases.

Only 298.7 pounds (0.008 %) of the total onsite releases were accounted for by IJC critical pollutants. The IJC critical pollutants released were lead and lead compounds (primarily to air and land), and mercury and mercury compounds (primarily to air). The facilities that released these pollutants are listed in Table 3.9-E.

The major release of non-IJC chemicals ($\geq$ 500,000 pounds) was of xylenes (to air). Other non-IJC chemicals released in substantial onsite quantities (150,000-499,999 pounds) were certain glycol ethers, n-butyl alcohol, toluene, ethylbenzene, and methyl isobutyl ketone (to air).

### 3.9.3 NPDES Data for the Clinton River AOC

The NPDES permitted discharges for Wayne and Oakland Counties, MI are summarized in Table 3.9-F. The total average annual permitted discharges in 2004 were 1,170,862 pounds, the majority of which was ammonia nitrogen and phosphorus.

The IJC critical pollutants PCBs (0.01 pound), lead (1,022 pounds) and mercury (2.95 pounds) were permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.9-G.

### 3.9.4 County Demographics and Health Status Data for the Clinton River AOC

The demographic profile, from the 2000 U.S. Census, for vulnerable populations living in the two counties of this AOC is shown in Table 3.9-H. Macomb County has much larger vulnerable populations than does Oakland County.

**Table 3.9-H County Demographic Profiles for the Clinton River AOC**

| Vulnerable population | Oakland | Macomb County | Total for AOC |
|---|---|---|---|
| Children 6 years and younger | 3160 | 72321 | 75481 |
| Females aged 15-44 | 7746 | 168445 | 176191 |
| Adults 65 years and older | 6710 | 107651 | 114361 |

According to the 2000 HRSA community health status reports, health status indicators that compared unfavorably with those of the U.S. and also with the median of the peer counties for the two counties relevant to the Clinton River AOC were as follows (indicators that were above the upper limit of the peer county range are bolded):

Oakland County:
Infant mortality (per 1,000 births)
- black infant mortality

Birth Measures (as percent)
- none

Death measures (per 100,000 population)
- stroke

Macomb County:
Infant mortality (per 1,000 births)
- white infant mortality

Birth measures (as percent)
- none

Death measures (per 100,000 population)
- **breast cancer (female)**
- colon cancer
- **coronary heart disease**
- lung cancer
- stroke

### 3.9.5 Summary and Conclusions for the Clinton River AOC

Two Michigan counties are relevant to this AOC: Oakland County and Macomb County. Oakland County also impacts the Rouge River AOC (Section 3.8).

#### 3.9.5.1 Hazardous Waste Sites

**Oakland County:** The five hazardous waste sites in Oakland County have undergone remediation, and there is no evidence that human exposure is occurring to site-related contaminants of concern. Groundwater at two sites, however, is still undergoing extraction and treatment, and vapor extraction of subsurface soil is ongoing at one site.

In the past, three of the waste sites may have contributed to the environmental burden of the IJC critical pollutants lead (all 3 sites) and PCBs (2 sites); these pollutants were found primarily in soil.

The sixth site in this county was an active manufacturing facility that reports through TRI.

**Macomb County:** The three hazardous waste sites in Macomb County have undergone remediation. One site, the South Macomb Disposal Authority, may still be releasing contaminants, as the leachate plume (to groundwater) was not contained.

These waste sites may have contributed to the environmental burden of the IJC critical pollutants lead (3 sites), PCBs (2 sites), and aldrin (1 site) in the past.

**Issues for Follow-Up**

Rose Township Dump (Oakland County): Complete capture of the groundwater plume was not occurring as of 2002, but residential wells were not yet affected. There is the potential, however, for residential wells to be affected in the future.

South Macomb Disposal Authority (Macomb County): As of 1995, leachate controls did not capture the entire plume, so there was concern for future contamination of residential wells. Additional remedial action is underway.

#### 3.9.5.2 TRI Data

The TRI onsite chemical releases for Oakland and Macomb Counties (combined) in 2001 were 3,580,901 pounds, primarily released to air. Very little was released to surface water or land. Oakland County accounted for 76% and Macomb County accounted for 24% of the total onsite releases.

Only 298.7 pounds (0.008 %) of the total onsite releases were accounted for by IJC critical pollutants. The IJC critical pollutants released were lead and lead compounds (primarily to air and land), and mercury and mercury compounds (primarily to air). The facilities that released these pollutants are listed in Table 3.9-E.

The major release of non-IJC chemicals (≥ 500,000 pounds) was of xylenes (to air).

#### 3.9.5.3 NPDES Data

The NPDES permitted discharges for Wayne and Oakland Counties, MI are summarized in Table 3.9-F. The total average annual permitted discharges in 2004 were 1,170,862 pounds, the majority of which was ammonia nitrogen and phosphorus.

The IJC critical pollutants PCBs (0.01 pound), lead (1,022 pounds) and mercury (2.95 pounds) were permitted to be discharged. Facilities permitted to release these pollutants are listed in Table 3.9-G.

#### 3.9.5.4 County Demographics and Health Status Indicators

Oakland County (vulnerable populations 510,496) had only two health status indicators that compared unfavorably with those of the U.S. and also with the median of the peer counties: these were black infant mortality and deaths from stroke.

Macomb County (vulnerable populations 348,417) had several health status indicators that compared unfavorably with those of the U.S. and with the median of the peer counties, including white infant mortality, and deaths from breast cancer, colon cancer, coronary heart disease, lung cancer, and stroke. Breast cancer (female) and coronary heart disease were the only indicators that were higher than the upper limit of the range for peer counties.

#### 3.9.5.5 Beneficial Use Impairments (BUIs)

Of the three health-related BUIs, restrictions on fish and wildlife consumption and beach closings were the two BUIs listed as impaired at this AOC site. Further information is available at the EPA web site (http://www.epa.gov/glnpo/aoc/).

**Table 3.9-C Waste Site Contaminants that Exceeded Health-Based Screening Values**
**Clinton River AOC**

| | | | Number of Records | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **CAS No.** | **Chemical Name** | **IJC Tracking Number** | **Air** | **Biota** | **Human Material** | **Other Media** | **Soil** | **Water** | **Total** |
| 053469-21-9 | AROCLOR 1242 | 1 | | | | 1 | 1 | | 2 |
| 012672-29-6 | AROCLOR 1248 | 1 | | | | 1 | | 1 | 2 |
| 011097-69-1 | AROCLOR 1254 | 1 | | | | 1 | 2 | | 3 |
| 011096-82-5 | AROCLOR 1260 | 1 | | | | 1 | 1 | | 2 |
| 001336-36-3 | POLYCHLORINATED BIPHENYLS | 1 | | 6 | | 4 | 7 | 6 | 23 |
| 000050-32-8 | BENZO(A)PYRENE | 4 | | | | 2 | 4 | | 6 |
| 000072-54-8 | DDD, P,P'- | 5 | | 3 | | 1 | 1 | 1 | 6 |
| 000072-55-9 | DDE, P,P'- | 5 | | 4 | | 1 | | 1 | 6 |
| 000050-29-3 | DDT, P,P'- | 5 | | 4 | | | 2 | 1 | 7 |
| 000309-00-2 | ALDRIN | 6 | | 2 | | | | 1 | 3 |
| 000060-57-1 | DIELDRIN | 6 | | 3 | | 1 | 1 | | 5 |
| 007439-92-1 | LEAD | 8 | | 2 | | 7 | 20 | 26 | 55 |
| 007439-97-6 | MERCURY | 9 | | 3 | | 2 | 7 | 8 | 20 |
| 000118-74-1 | HEXACHLOROBENZENE | 11 | | 3 | | | | | 3 |
| | | **Total IJC** | **0** | **30** | **0** | **22** | **46** | **45** | **143** |
| 000071-55-6 | 1,1,1-TRICHLOROETHANE | | | | | | 1 | 1 | 2 |
| 000075-34-3 | 1,1-DICHLOROETHANE | | 4 | | | 1 | | 4 | 9 |
| 000075-35-4 | 1,1-DICHLOROETHENE | | | | | | | 2 | 2 |
| 000120-82-1 | 1,2,4-TRICHLOROBENZENE | | | | | | | 2 | 2 |
| 000095-50-1 | 1,2-DICHLOROBENZENE | | | | | | 1 | | 1 |
| 000107-06-2 | 1,2-DICHLOROETHANE | | 2 | | | | | 3 | 5 |
| 000156-59-2 | 1,2-DICHLOROETHENE, CIS- | | | | | | | 1 | 1 |
| 000540-59-0 | 1,2-DICHLOROETHYLENE | | | | | 3 | 2 | 7 | 12 |
| 000078-87-5 | 1,2-DICHLOROPROPANE | | 4 | | | | | | 4 |
| 000106-46-7 | 1,4-DICHLOROBENZENE | | | | | | | 3 | 3 |
| 000078-93-3 | 2-BUTANONE | | | | | 2 | 3 | 5 | 10 |
| 000091-57-6 | 2-METHYLNAPHTHALENE | | | | | 1 | | | 1 |
| 000100-02-7 | 4-NITROPHENOL | | | | | 2 | | 2 | 4 |
| 000067-64-1 | ACETONE | | | | | | 1 | | 1 |
| 007429-90-5 | ALUMINUM | | | 1 | | 1 | 2 | 6 | 10 |
| 007664-41-7 | AMMONIA | | | | | | | 2 | 2 |
| 000120-12-7 | ANTHRACENE | | | | | | 1 | | 1 |
| 007440-36-0 | ANTIMONY | | | | | 2 | 3 | 5 | 10 |
| 007440-38-2 | ARSENIC | | | | | 7 | 16 | 22 | 45 |
| 007440-39-3 | BARIUM | | | | | 3 | 4 | 10 | 17 |
| 000071-43-2 | BENZENE | | | | | 5 | 3 | 23 | 31 |
| 000056-55-3 | BENZO(A)ANTHRACENE | | | | | 2 | 4 | | 6 |
| 000205-99-2 | BENZO(B)FLUORANTHENE | | | | | 2 | 4 | | 6 |
| 000207-08-9 | BENZO(K)FLUORANTHENE | | | | | 2 | 4 | | 6 |
| 000111-44-4 | BIS(2-CHLOROETHYL) ETHER | | | | | | | 1 | 1 |
| 000085-68-7 | BUTYL BENZYL PHTHALATE | | | | | | 1 | | 1 |
| 007440-43-9 | CADMIUM | | | | | 7 | 12 | 16 | 35 |
| 000057-74-9 | CHLORDANE | | | 3 | | | | | 3 |
| 016887-00-6 | CHLORIDE | | 1 | | | | | | 1 |
| HZ0700-06-T | CHLORINATED FLUOROCARBONS | | | | | | | 2 | 2 |
| 007782-50-5 | CHLORINE | | 2 | | | | | | 2 |
| 000108-90-7 | CHLOROBENZENE | | | | | 4 | 4 | 3 | 11 |
| 000124-48-1 | CHLORODIBROMO-METHANE | | | | | | | 1 | 1 |
| 000067-66-3 | CHLOROFORM | | | | | | | 3 | 3 |
| 007440-47-3 | CHROMIUM | | | | | 8 | 14 | 18 | 40 |
| 018540-29-9 | CHROMIUM, HEXAVALENT | | | | | 1 | | 2 | 3 |

| | | | Number of Records | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CAS No. | Chemical Name | IJC Tracking Number | Air | Biota | Human Material | Other Media | Soil | Water | Total |
| 005103-71-9 | CIS-CHLORDANE | | | | | 1 | 2 | 1 | 4 |
| 007440-50-8 | COPPER | | | 2 | | 3 | | 2 | 7 |
| 000106-44-5 | CRESOL, PARA- | | | | | 2 | | 2 | 4 |
| 000117-81-7 | DI(2-ETHYLHEXYL)PHTHALATE | | | 1 | | 7 | 14 | 16 | 38 |
| 000053-70-3 | DIBENZO(A,H) ANTHRACENE | | | | | 2 | 1 | | 3 |
| 073506-91-9 | DICHLOROBROMOETHANE | | | | | | | 1 | 1 |
| 000084-74-2 | DI-N-BUTYL PHTHALATE | | | | | 2 | 1 | 2 | 5 |
| 000117-84-0 | DI-N-OCTYL PHTHALATE | | | | | 1 | | | 1 |
| 000060-29-7 | ETHYL ETHER | | | | | | | 2 | 2 |
| 000100-41-4 | ETHYLBENZENE | | | | | 3 | 6 | 5 | 14 |
| 000206-44-0 | FLUORANTHENE | | | | | | 2 | | 2 |
| 001024-57-3 | HEPTACHLOR EPOXIDE | | | 3 | | | | | 3 |
| 000319-84-6 | HEXACHLOROCYCLO-HEXANE, ALPHA- | | | | | 1 | | 1 | 2 |
| 000058-89-9 | HEXACHLOROCYCLO-HEXANE, GAMMA- | | | | | 1 | 1 | 1 | 3 |
| HZ1000-01-T | HYDROCARBONS, UNSPECIFIED | | | | | | 4 | 4 | 8 |
| 007647-01-0 | HYDROCHLORIC ACID | | 2 | | | | | | 2 |
| 007664-39-3 | HYDROGEN FLUORIDE | | 2 | | | | | | 2 |
| 000193-39-5 | INDENO(1,2,3-CD)PYRENE | | | | | 2 | 2 | | 4 |
| HZ0900-18-T | INORGANICS, N.O.S. | | | 2 | | | | | 2 |
| 007439-89-6 | IRON | | | | | | | 5 | 5 |
| 001332-37-2 | IRON OXIDE | | | | | 1 | | | 1 |
| 001305-78-8 | LIME | | | | | 1 | 1 | 1 | 3 |
| 007439-95-4 | MAGNESIUM | | | 1 | | | 1 | 2 | 4 |
| 007439-96-5 | MANGANESE | | | | | 3 | 7 | 16 | 26 |
| HZ0900-01-T | METALS N.O.S. | | | 1 | | | 3 | 4 | 8 |
| 000074-82-8 | METHANE | | | | | | | 2 | 2 |
| 000075-09-2 | METHYLENE CHLORIDE | | | | | 2 | 7 | 20 | 29 |
| 000091-20-3 | NAPHTHALENE | | | | | 1 | | 1 | 2 |
| 007440-02-0 | NICKEL | | | 2 | | 5 | 5 | 10 | 22 |
| 014797-55-8 | NITRATE | | | | | | | 4 | 4 |
| 000086-30-6 | N-NITROSODIPHENYLAMINE | | | | | | | 1 | 1 |
| 029082-74-4 | OCTACHLOROSTYRENE | | | 1 | | | | | 1 |
| HZ2100-16-T | PARTICULATES | | 2 | 1 | | | 1 | 1 | 5 |
| 000087-86-5 | PENTACHLOROPHENOL | | | | | 2 | 1 | 3 | 6 |
| 000085-01-8 | PHENANTHRENE | | | | | | 1 | | 1 |
| 000088-99-3 | PHTHALIC ACID | | | | | | 2 | 2 | 4 |
| 130498-29-2 | POLYCYCLIC AROMATIC HYDROCARBONS | | | | | 3 | 8 | 4 | 15 |
| HZ1000-51-T | POLYCYCLIC ORGANIC MATTER | | | | | | 1 | 1 | 2 |
| 000129-00-0 | PYRENE | | | | | | 1 | | 1 |
| 007782-49-2 | SELENIUM | | | | | 2 | 4 | 4 | 10 |
| 007440-22-4 | SILVER | | | | | 3 | 3 | 2 | 8 |
| 000100-42-5 | STYRENE | | | | | | 2 | 2 | 4 |
| 000127-18-4 | TETRACHLOROETHYLENE | | | | | | | 2 | 2 |
| 007440-28-0 | THALLIUM | | | | | 1 | 4 | 1 | 6 |
| 000108-88-3 | TOLUENE | | 4 | | | 3 | 6 | 11 | 24 |
| 000079-01-6 | TRICHLOROETHYLENE | | | | | 3 | | 15 | 18 |
| 000075-69-4 | TRICHLOROFLUORO-METHANE | | 4 | | | | | | 4 |
| 007440-62-2 | VANADIUM | | | | | 2 | 3 | 3 | 8 |
| 000075-01-4 | VINYL CHLORIDE | | | | | 1 | | 14 | 15 |

| | | | Number of Records | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **CAS No.** | **Chemical Name** | **IJC Tracking Number** | **Air** | **Biota** | **Human Material** | **Other Media** | **Soil** | **Water** | **Total** |
| HZ1900-01-T | VOLATILE ORGANIC COMPOUNDS N.O.S. | | 2 | 1 | | | | | 3 |
| 001330-20-7 | XYLENES, TOTAL | | 4 | | | 3 | 8 | 9 | 24 |
| 007440-66-6 | ZINC | | | 2 | | 5 | 5 | 13 | 25 |
| MEDEXP-00-0 | | | 9 | 13 | | 6 | 21 | 29 | 78 |
| | | | 2 | 5 | | | 4 | | 11 |
| | | **Total Non-IJC** | **44** | **39** | **0** | **125** | **212** | **363** | **783** |
| | | **Total** | **44** | **69** | **0** | **147** | **258** | **408** | **926** |

## Table 3.9-D TRI Releases (in pounds, 2001) for the Clinton River AOC

| Chemical | IJC Tracking Number | Total Air Emissions | Surface Water Discharges | Under-ground Injection | Releases to Land | Total Onsite Releases | Total Offsite Releases | Total On- and Offsite Releases |
|---|---|---|---|---|---|---|---|---|
| LEAD | 8 | 22.59128 | 0 | 0 | 1 | 23.59128 | 386.5 | 410.09128 |
| LEAD COMPOUNDS | 8 | 263.102 | 0 | 0 | 0 | 263.102 | 4993.931 | 5257.033 |
| MERCURY | 9 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.1 |
| MERCURY COMPOUNDS | 9 | 12 | 0 | 0 | 0 | 12 | 0 | 12 |
| | **Total IJC** | **297.69328** | **0** | **0** | **1** | **298.69328** | **5380.531** | **5679.22428** |
| XYLENE (MIXED ISOMERS) | | 1341515 | 0 | 0 | 0 | 1341515 | 0 | 1341515 |
| CERTAIN GLYCOL ETHERS | | 392474 | 0 | 0 | 0 | 392474 | 1117 | 393591 |
| N-BUTYL ALCOHOL | | 383820 | 0 | 0 | 0 | 383820 | 0 | 383820 |
| TOLUENE | | 265481 | 0 | 0 | 0 | 265481 | 5728 | 271209 |
| ETHYLBENZENE | | 246208 | 0 | 0 | 0 | 246208 | 250 | 246458 |
| METHYL ISOBUTYL KETONE | | 206587 | 0 | 0 | 0 | 206587 | 750 | 207337 |
| N-METHYL-2-PYRROLIDONE | | 143360 | 0 | 0 | 0 | 143360 | 8800 | 152160 |
| 1,2,4-TRIMETHYLBENZENE | | 132910 | 0 | 0 | 0 | 132910 | 0 | 132910 |
| METHYL ETHYL KETONE | | 128487 | 0 | 0 | 0 | 128487 | 6250 | 134737 |
| METHANOL | | 124179 | 0 | 0 | 0 | 124179 | 0 | 124179 |
| TRICHLOROETHYLENE | | 40553 | 0 | 0 | 0 | 40553 | 0 | 40553 |
| HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY) | | 34000 | 0 | 0 | 0 | 34000 | 0 | 34000 |
| AMMONIA | | 33772 | 0 | 0 | 0 | 33772 | 0 | 33772 |
| 2-CHLORO-1,1,1,2-TETRAFLUOROETHANE | | 28416 | 0 | 0 | 0 | 28416 | 0 | 28416 |
| N-HEXANE | | 18038 | 0 | 0 | 0 | 18038 | 0 | 18038 |
| STYRENE | | 14121 | 0 | 0 | 0 | 14121 | 0 | 14121 |
| TRIETHYLAMINE | | 6629 | 0 | 0 | 0 | 6629 | 1500 | 8129 |
| NICKEL | | 5314 | 36 | 0 | 0 | 5350 | 1810 | 7160 |
| DICHLOROMETHANE | | 4464 | 0 | 0 | 0 | 4464 | 0 | 4464 |
| NICKEL COMPOUNDS | | 3572 | 262 | 0 | 0 | 3834 | 112920 | 116754 |
| NITRIC ACID | | 3683 | 0 | 0 | 0 | 3683 | 0 | 3683 |
| ETHYLENE GLYCOL | | 3482 | 0 | 0 | 0 | 3482 | 0 | 3482 |
| SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY) | | 2994 | 0 | 0 | 0 | 2994 | 0 | 2994 |
| CYANIDE COMPOUNDS | | 2771 | 5 | 0 | 0 | 2776 | 250 | 3026 |
| MANGANESE COMPOUNDS | | 1696 | 70 | 0 | 0 | 1766 | 49793 | 51559 |
| ZINC COMPOUNDS | | 1484 | 152 | 0 | 8 | 1644 | 289202 | 290846 |
| METHYL TERT-BUTYL ETHER | | 1444 | 0 | 0 | 0 | 1444 | 0 | 1444 |
| 1,1-DICHLORO-1-FLUOROETHANE | | 1020 | 0 | 0 | 0 | 1020 | 250 | 1270 |
| SODIUM NITRITE | | 962 | 0 | 0 | 5 | 967 | 316 | 1283 |
| CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION) | | 943 | 5 | 0 | 0 | 948 | 76607 | 77555 |
| MANGANESE | | 790 | 33 | 0 | 0 | 823 | 3965 | 4788 |
| ALUMINUM (FUME OR DUST) | | 750 | 5 | 0 | 0 | 755 | 18211 | 18966 |
| CHLORINE | | 505 | 0 | 0 | 0 | 505 | 0 | 505 |
| DIISOCYANATES | | 350 | 0 | 0 | 0 | 350 | 14301 | 14651 |
| CUMENE | | 301 | 0 | 0 | 0 | 301 | 0 | 301 |

| Chemical | IJC Tracking Number | Total Air Emissions | Surface Water Discharges | Under-ground Injection | Releases to Land | Total Onsite Releases | Total Offsite Releases | Total On- and Offsite Releases |
|---|---|---|---|---|---|---|---|---|
| NITRATE COMPOUNDS | | 299 | 0 | 0 | 0 | 299 | 156184 | 156483 |
| FORMALDEHYDE | | 298 | 0 | 0 | 0 | 298 | 0 | 298 |
| TERT-BUTYL ALCOHOL | | 295 | 0 | 0 | 0 | 295 | 0 | 295 |
| COPPER COMPOUNDS | | 270 | 10 | 0 | 0 | 280 | 7465 | 7745 |
| COBALT COMPOUNDS | | 250 | 5 | 0 | 0 | 255 | 5 | 260 |
| DIETHANOLAMINE | | 255 | 0 | 0 | 0 | 255 | 0 | 255 |
| PROPYLENE | | 250 | 0 | 0 | 0 | 250 | 0 | 250 |
| COPPER | | 181 | 0 | 0 | 8 | 189 | 5011 | 5200 |
| CHROMIUM | | 120 | 33 | 0 | 0 | 153 | 3968 | 4121 |
| 1,2-BUTYLENE OXIDE | | 149 | 0 | 0 | 0 | 149 | 0 | 149 |
| NAPHTHALENE | | 106 | 0 | 0 | 0 | 106 | 0 | 106 |
| CYCLOHEXANE | | 91 | 0 | 0 | 0 | 91 | 0 | 91 |
| BUTYL ACRYLATE | | 78 | 0 | 0 | 0 | 78 | 0 | 78 |
| BENZENE | | 77 | 0 | 0 | 0 | 77 | 0 | 77 |
| TOLUENE-2,4-DIISOCYANATE | | 76 | 0 | 0 | 0 | 76 | 0 | 76 |
| DICYCLOPENTADIENE | | 33 | 0 | 0 | 0 | 33 | 0 | 33 |
| BARIUM COMPOUNDS | | 22 | 0 | 0 | 0 | 22 | 85718 | 85740 |
| METHYL METHACRYLATE | | 16 | 0 | 0 | 0 | 16 | 0 | 16 |
| TOLUENE-2,6-DIISOCYANATE | | 16 | 0 | 0 | 0 | 16 | 0 | 16 |
| HYDROGEN FLUORIDE | | 5 | 0 | 0 | 0 | 5 | 0 | 5 |
| ZINC (FUME OR DUST) | | 2 | 0 | 0 | 0 | 2 | 2298 | 2300 |
| VANADIUM COMPOUNDS | | 1 | 0 | 0 | 0 | 1 | 22 | 23 |
| BENZO(G,H,I)PERYLENE | | 0.22 | 0 | 0 | 0 | 0.22 | 0 | 0.22 |
| POLYCYCLIC AROMATIC COMPOUNDS | | 0.2 | 0 | 0 | 0 | 0.2 | 0 | 0.2 |
| BARIUM | | 0 | 0 | 0 | 0 | 0 | 96500 | 96500 |
| CADMIUM | | 0 | 0 | 0 | 0 | 0 | 14 | 14 |
| SODIUM DIMETHYLDITHIO-CARBAMATE | | 0 | 0 | 0 | 0 | 0 | 10560 | 10560 |
| | **Total Non-IJC** | **3579965.42** | **616** | **0** | **21** | **3580602.42** | **959765** | **4540367.42** |
| | **Total** | **3580263.113** | **616** | **0** | **22** | **3580901.113** | **965145.531** | **4546046.644** |

**Table 3.9-E TRI Facilities Releasing IJC Critical Pollutants Onsite for the Clinton River AOC**

| IJC Critical Pollutant | Number of Facilities | Facility Name | TRIF ID | City |
|---|---|---|---|---|
| **Lead and lead compounds** | **11** | | | |
| Macomb County, MI | 3 | TOWER AUTOMOTIVE TOOL INC. | 48036TWRTM44850 | CLINTON TOWNSHIP |
| | | DU PONT MT. CLEMENS PLANT | 48043DPNTM400GR | MOUNT CLEMENS |
| | | TI GROUP AUTOMOTIVE SYSTEM | 48090BNDYT12345 | WARREN |
| Oakland County, MI | 8 | AKZO NOBEL COATINGS INC. | 48053KZCTN30BRU | PONTIAC |
| | | AKZO NOBEL COATINGS INC. CAR REFINISHES & DECORATIVE COAT. | 48341KZCTN2527B | PONTIAC |
| | | CONTINENTAL ALUMINUM | 48165CNTNN29201 | NEW HUDSON |
| | | DEBRON INDL. ELECTRONICS INC. | 48083DBRNN591EX | TROY |
| | | EATON CORP. | 48308TNCRP1400S | ROCHESTER HILLS |
| | | GM MCG ORION ASSEMBLY | 48055GNRLM4555G | ORION |
| | | GM PONTIAC ASSEMBLY CENTER | 48058GMCTR820OP | PONTIAC |
| | | MOLEX AUTOMOTIVE | 48326CRDLL2025T | AUBURN HILLS |
| **Mercury and mercury compounds** | **1** | | | |
| Oakland County, MI | 1 | GM MCG ORION ASSEMBLY | 48055GNRLM4555G | ORION |

**Table 3.9-F NPDES Permitted Average Annual Discharges (in pounds, 2004) to Surface Water, Clinton River AOC**

| Chemical | IJC Tracking Number | Discharge |
|---|---|---|
| POLYCHLORINATED BIPHENYLS (PCBS) | 1 | 0.01 |
| LEAD, TOTAL (AS PB) | 8 | 1022 |
| MERCURY, TOTAL (AS HG) | 9 | 2.95 |
| | **Total IJC** | **1024.96** |
| BARIUM, TOTAL (AS BA) | | 1168 |
| COPPER, TOTAL (AS CU) | | 594.95 |
| CYANIDE, FREE (AMEN. TO CHLORINATION) | | 52.93 |
| NITROGEN, AMMONIA TOTAL (AS N) | | 716664.73 |
| PHOSPHORUS, TOTAL (AS P) | | 446449.75 |
| SILVER, TOTAL (AS AG) | | 12.05 |
| STRONTIUM,TOTAL (AS SR) | | 4653.75 |
| ZINC, TOTAL (AS ZN) | | 240.90 |
| | **Total Non-IJC** | **1169837.06** |
| | **Total** | **1170862.02** |

**Table 3.9-G NPDES Facilities Permitted to Discharge IJC Critical Pollutants, Clinton River AOC**

| IJC Critical Pollutant | Number of Facilities | Facility Name | NPDES | City |
|---|---|---|---|---|
| **Polychlorinated Biphenyls (PCBs)** | **1** | | | |
| Oakland County, MI | 1 | GM-PONTIAC NORTH CAMPUS | MI0056031 | PONTIAC |
| **Lead** | **2** | | | |
| Oakland County, MI | 2 | COMMERCE TWP WWTP | MI0025071 | COMMERCE |
| | | MICH SEAMLESS TUBE LLC | MI0001902 | SOUTH LYON |
| **Mercury** | **5** | | | |
| Macomb County, MI | 1 | NEW BALTIMORE WWTP | MI0023680 | NEW BALTIMORE |
| Oakland County, MI | 4 | HOLLY WWTP | MI0020184 | HOLLY |
| | | OAKLAND CO WALLED LK/NOVI WWTP | MI0024287 | NOVI |
| | | PONTIAC WWTP | MI0023825 | PONTIAC |
| | | WIXOM WWTP | MI0024384 | WIXOM |