



# Neville Island Bucket Brigade: 2002 Report



**Produced by:**

**Clean Water Action**

**Clean Water Fund**

**Neville Island Good Neighbor Committee**

## ACKNOWLEDGEMENTS

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## CLEAN WATER ACTION & CLEAN WATER FUND

Clean Water Action (CWA) is a national citizens' organization working for clean, safe, affordable water, prevention of health threatening pollution, creation of environmentally safe jobs and businesses, and empowerment of people to make democracy work.

Clean Water Fund (CWF) is a national research and education organization which promotes the public interest on issues related to water, waste, and toxics.

CWA and CWF created the Neville Island Good Neighbor Committee in 1996, to unite residents living near Neville Island who are concerned about pollution from industries there. Since then, the Good Neighbor Committee has worked to educate the public about the pollution problems in the area, encouraged Neville Island industries to adopt less toxic practices that reduce pollution, and worked to ensure that environmental laws are enforced.

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## **HISTORY OF THE NEVILLE ISLAND BUCKET BRIGADE**

Industries on Neville Island have long been a major source of air pollution for Allegheny County and Western Pennsylvania. In roughly one square mile, there are nearly two dozen plants that, combined, emit 25 percent of the toxic chemical air pollution in the County. Over 50,000 residents live within a mile and a half downwind of Neville Island.

Communities for a Better Environment (CBE), based in Oakland, California, developed the bucket air sampling device as a low-cost way for residents living near air pollution sources to take air samples and get them analyzed for various air toxics. In 2001, CBE trained members of CWA and the Good Neighbor Committee to construct and to use the bucket sampling devices. CBE has worked with many communities around the United States on similar projects, and the Environmental Protection Agency (EPA) Region 9 has determined that the buckets do provide accurate results, similar to equipment used by environmental agencies.

Currently, there are eight air sampling buckets in use by residents in the Neville Island area. The samples are collected in a tedlar sample bag inside the air sampling bucket for about three to four minutes. The tedlar bags are mailed overnight to a certified lab in Simi Valley, California, that analyzes the samples within 24 to 48 hours. Tests are done for 68 volatile organic compounds (VOCs) using EPA test method TO-15, and for 20 reduced sulfur compounds using EPA method ASTM 5504. A library scan is also done to tentatively identify other compounds present in the samples.

While it is clearly the responsibility of environmental agencies to protect public health, CWA and the Good Neighbor Committee residents formed the Bucket Brigade to investigate the toxic chemicals that residents are breathing and to monitor for themselves the major polluters in their community.

From March 2001 to January 2002, six air pollution samples were taken using the air sampling buckets in the Neville Island area, including in Avalon, Ben Avon, Neville Township, and West View. In these six samples combined, 45 different toxic chemicals

were detected. Among these chemicals were many VOCs, including solvents, petrochemicals, sulfur compounds, and other industrial chemicals. Many of these VOCs and sulfur compounds are carcinogens, can cause birth defects or developmental disorders, are respiratory irritants, or have neurotoxic effects. At that time, the ACHD monitored only one of the compounds detected by the bucket brigade, hydrogen sulfide, near Neville Island, and currently, the only air toxic ACHD has set an ambient air standard for is hydrogen sulfide. Some states, including Texas, Louisiana, and North Carolina have already set maximum ambient standards for many of these air toxics.

## **2002 NEVILLE ISLAND AIR SAMPLING RESULTS**

The Neville Island Bucket Brigade took eight air samples in 2002; the sample taken in January 2002 was also included in both the 2001 and 2002 report. Samples were taken in Avalon, Ben Avon, Neville Township, and Robinson Township. A sample was also taken in South Fayette, Allegheny County, at the request of the ACHD, as a “background sample” to test the air sampling bucket for contamination in an area of the county where there is little air pollution.

In the eight samples total, 51 VOCs, sulfur compounds, and other chemical compounds were detected in the air in the Neville Island area (*see Chart A and B*). A significant number of these chemicals have the potential to cause serious harm, or have the potential to aggravate existing medical conditions (*see Chart D*):

- 4 are carcinogens,
- 6 can cause birth defects or reproductive/developmental disorders,
- 17 are respiratory irritants,
- 28 have neurotoxic effects.

While neither Allegheny County nor Pennsylvania have set standards for ambient levels of these chemicals, results from the Neville Island samples can be compared to both EPA standards and standards set for air toxics by other states. Nine of these VOCs and sulfur compounds were detected several times at levels well above the EPA Region 3 Risk-Based Concentrations, the Texas Short-Term Effects Screening Level (ESL), the

Texas Long-Term ESL, and the North Carolina Annual Ambient Air Standard (*see Chart C*). These standards represent a variety of health based standards, both for acute and chronic exposure in the community. **The nine chemicals are acrylonitrile, benzene, carbon disulfide, carbonyl sulfide, dicyclopentadiene, ethylbenzene, hydrogen sulfide, methylene chloride, and 1,2,4-trimethylbenzene.** Once again, many of these VOCs and sulfur compounds represent a wide range of potential health effects on people, on animals, and on the environment.

Finally, results from the background sample taken in South Fayette help confirm the local nature of the air toxics problem near Neville Island. Results from this sample detected the lowest number of contaminants of any sample (seven), and generally represented some of the least toxic of the chemicals that have been detected. None of the nine chemicals that exceeded the EPA's and other states' ambient air standards were detected in the South Fayette sample. CWA chose as its sampling site the same location in South Fayette that ACHD uses for measuring background levels of air pollutants for the County. In addition to showing that sources of the air toxics are not coming from outside the area, the results confirm that the bucket equipment itself is not contaminating the samples.

## **SOURCES OF TOXIC CHEMICALS IN THE AREA**

As discussed previously, the industries on Neville Island are potential sources of the air toxics in the samples. These industries include chemicals plants, a coke oven, petroleum tank farms, a carbon filter/hazardous waste incinerator, an asphalt plant, and others. Of all the chemicals detected, eleven different chemicals are known to be emitted from Neville Island plants, however, it is likely that many of the other chemicals also come from Neville Island industries (*see Chart E*).

Benzene is emitted by multiple companies on Neville Island in substantial quantities. While automobile traffic in the area contributes to benzene levels, it is likely that it only comprises a small percentage of the benzene detected. MTBE, acrolein, and 1,3-

butadiene are all emitted by automobiles in significant quantities, yet tests run by the lab have not detected any of these three chemicals in the bucket samples.

Carbon disulfide, carbonyl sulfide, hydrogen sulfide, and other sulfur compounds are likely by-products emitted by Shenango's coke plant, a plant that, while having reduced emissions in the last year, has a notorious history for poor compliance.

Dicyclopentadiene is a hazardous chemical that is used in large quantities by Neville Chemical's plant on Neville Island. It has a strong odor that is detectable at low concentrations, and the health standards are set at very low levels as well.

Ethylbenzene is emitted by multiple companies on Neville Island in significant quantities. It is a common hazardous chemical which is used as a solvent, as well as in the production of styrene and as a constituent of asphalt and naphtha.

Methylene chloride and 1,2,4-trimethylbenzene are common industrial solvents that are emitted by several companies on Neville Island. Methylene chloride is predominantly used as a solvent in paint strippers and removers, and it is also used in the manufacture of drugs, pharmaceuticals, film coatings, and electronics.

Tests detected acrylonitrile at levels well above all four ESLs and Ambient Air Standards used in Chart C. This chemical is used in the plastics industry, however, no companies in the Neville Island area have permits to emit this toxic chemical, and after six months of investigating this chemical in the area, CWA and the ACHD have yet to determine the unlicensed polluter of acrylonitrile.

## **2002 ACCOMPLISHMENTS**

In response to numerous requests to the ACHD, they have begun to take air samples in Avalon and Stowe Township that test for acrylonitrile and benzene, as well as for the

presence of other toxic chemicals. At this time, no results from this sampling are available, however, there should be some data available in the first few months of 2003.

Another project that began in 2001, focusing on changing County air regulations, witnessed a victory in November as well. Over the last year and a half, CWA and the Good Neighbor Committee have been working with members of the Allegheny County Council and the ACHD to improve existing county air pollution regulations through a proposal called the “Environmental Fairness and Pollution Prevention Act.” County Council passed a motion that urged the ACHD to incorporate the “bad actor” provision of the Act into their air regulations. The ACHD agreed to this and will soon amend a “bad actor” provision into county air regulations. It will mandate that companies must be in compliance with their current air pollution permits prior to applying for permits to expand or to build new facilities.

## **RECOMMENDATIONS**

**1. Continued community monitoring.** In 2003, the Neville Island Bucket Brigade will continue monitoring the Neville Island area. We recommend that the ACHD continue their air toxics monitoring as well, in order to more fully analyze air in the areas surrounding Neville Island industries. In addition, CWA and the Good Neighbor Committee wish to see environmental agencies provide increased resources to help residents continue community air monitoring near Neville Island.

**2. Better in-plant and fence-line monitoring.** ACHD inspectors should take air samples when visiting a plant, whether for a regular inspection or in response to resident complaints to the ACHD hotline. This type of monitoring is critical to proper enforcement of air pollution regulations. The ACHD should establish fence-line monitors for plants that they determine are having the most compliance problems or are the largest sources of air toxics on Neville Island. The ACHD should improve the monitoring requirements in companies’ Title V operating permits. These permits should require greater actual measurement of emissions, rather than simply using emission estimates to show compliance.

**3. Improved enforcement.** The ACHD should increase its responsiveness to resident complaints and especially ensure that inspectors go out to plants when complaints are called in during non-business hours. Once violations are found, companies should be fined in order to deter future violations. The ACHD should speedily incorporate the “bad actor provision” into Article XXI, the county air pollution regulations, so that companies must operate in compliance prior to getting permits to expand.

**4. Improved air pollution permitting.** Once the “bad actor provision” is incorporated into Article XXI, the ACHD should begin work on the pollution prevention and cumulative impact provisions, as outlined in the “Environmental Fairness and Pollution Prevention Act.” These provisions would improve the permitting of new air pollution sources by requiring pollution prevention analysis in order to reduce overall emissions. The Bucket Brigade sampling results clearly indicate the need for the cumulative impact of multiple sources of air toxics to be considered in permitting. Factors such as total amount of air toxics already present in a neighborhood, geography, and common weather conditions, such as inversions, should all be considered before new pollution sources are sited.

**5. Ambient standards for air toxics.** Finally, CWA and the Good Neighbor Committee would like to work with ACHD to develop ambient air toxics standards such as ones that have already been implemented in other states.

## APPENDIX— Explanation of Screening Levels and Ambient Air Standards

### **EPA Region 3 Risk-Based Concentrations:**

- Developed by EPA staff to assist in risk assessments, especially for Superfund sites.
- Levels are based on best available health effects studies, including EPA IRIS database.
- Levels are set for a one in a million cancer risk, or for an equivalent non-cancer risk (hazard quotient = 1)

### **North Carolina Annual Ambient Air Standards:**

- Legally enforceable standards in North Carolina, developed through North Carolina's regulatory process.
- Based on health effects about the chemicals.

### **Texas Long-Term Effects Screening Levels:**

- Based on existing studies of chemical health effects during an exposure period of *one year*, in most cases. For *benzene* and *ethylene dichloride* it indicates a *24-hour* exposure period. Below these levels, no adverse health effects are thought likely to occur.
- Reflect the experimentally-determined levels at which the chemicals caused adverse effects in study populations of people or animals, combined with safety factors to account for the differences among human populations and between humans and animals.
- Not legally enforceable.

### **Texas Short-Term Effects Screening Levels:**

- Based on existing studies of chemical health effects during an exposure period of *one hour*. Below these levels, no adverse health effects are thought likely to occur.
- Reflect the experimentally-determined levels at which the chemicals caused adverse effects in study populations of people or animals, combined with safety factors to account for the differences among human populations and between humans and animals.
- Not legally enforceable.