



**Figure 1:** A Worldscale Shell Ethane Cracker in Singapore.  
Source: .Shell Flickr (CC-BY-NC-ND 2.0)  
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Air Contaminant	Facility Wide Emission Rate (Tons Per Year)
Nitrogen Oxides (NO <sub>x</sub> )	348
Carbon Monoxide (CO)	1,012
Filterable Particulate Matter (PM)	71
PM <sub>10</sub> (Large)	164
PM <sub>2.5</sub> (Fine)	159
Sulfur Oxides (SO <sub>x</sub> )	21
Volatile Organic Compounds (VOCs)	522
Hazardous Air Pollutants (HAPs)	30.5
Ammonia (NH <sub>3</sub> )	152
Carbon Dioxide Equivalent (CO <sub>2</sub> e)	2,248,293

**Figure 2:** Shell Facility's Potential to Emit.  
Source: PA Bulletin Doc. No. 15-558a

## What Will the Facility Do?

- The Shell Appalachia Petrochemical Facility or "Ethane Cracker" is a worldscale chemical processing plant that is proposed to be built in Monaca, Beaver County, Pennsylvania.
- If built, Shell's facility would make plastic from ethane, a component of Marcellus Shale natural gas.
- The facility has the capacity to produce over 1 million metric tons of plastic a year.
- A typical "ethane cracking" facility can be seen in *Figure 1*.

## What Will It Emit?

The proposed facility will be a major source of air pollution. A table of the facility's potential to emit can be seen in *Figure 2*. Monaca is located in Beaver County, which is currently designated as nonattainment for ground-level ozone. Ozone is a product of volatile organic compounds (VOCs) and nitrogen oxide (NO<sub>x</sub>) emissions. The facility will emit large amounts of VOCs and NO<sub>x</sub>. The facility will be a major source of Hazardous Air Pollutants (HAPs). Ozone and HAPs have various harmful human health impacts; the operation of this facility would increase the risk of health impacts associated with this pollution.

## What Are the Health Concerns?

### Air toxics

- Air toxics, also known as HAPs, are pollutants that are known to, or are suspected to, cause cancer or other serious health effects (e.g. birth defects).
- There are 187 different HAPs that the EPA is working to reduce in the environment.

### VOCs and Ozone

- VOCs react with NO<sub>x</sub> in the air to create ground-level ozone (smog), which makes breathing difficult, especially for children, the elderly, and individuals with asthma. A number of VOCs are also HAPs.
- VOCs may cause eye, nose, and throat irritation; headaches, loss of coordination, nausea; damage to liver, kidney, and central nervous system.
- The ability of VOCs to cause health effects varies greatly — from those that are highly toxic, to those with no known health effect.



# Taking Action: What You Need to Know about Shell's Petrochemical Facility ("Ethane Cracker")

## Issues with the Ethane Cracker Identified by The Council Include:

### Fenceline Monitoring

An active fenceline monitoring system is essential for determining what emissions are leaving the facility and escaping into the community. Monitoring can be done for various pollutants of concern, including volatile organic compounds and hazardous air pollutants. Fenceline monitoring serves as an important early response system. With this technology, Shell and the community will be able to identify the exact amount, location, and type of emissions coming from the facility into nearby neighborhoods. These systems are becoming more and more common around refineries and chemical manufacturing facilities throughout the nation. If Shell wishes to be a "good neighbor," they should at least implement the same technology used in their other facilities across the nation; technology that will stop leaks and protect public health.

### Public Data and Transparency

It is important that everyone is aware of the effects of the proposed Shell facility, and that residents will be alerted in the event of an emergency or air quality event. Data from the fenceline monitoring system should be readily accessible via the internet, mobile devices, and through email or text-based alerts. These data should be available during construction and operation of the plant.

### Flaring

Flares and incinerators will be used at the Shell facility to destroy VOCs in emergency situations and during regular operation of the facility. Currently, there are no individual limits on the amount of VOCs that a flare may emit. There are also no monitoring and testing requirements to ensure that flares are operated properly in order to destroy VOCs. Having these requirements and limitations helps ensure that flares and incinerators are operating as intended and provides a means of checking for and correcting when sub-optimal conditions are detected. Flares and incinerators account for about 45% of Shell's overall potential to emit for VOCs and 12% of Shell's potential to emit for HAPs. It is therefore crucial that Shell has a way of keeping track of flaring emissions, identifying and correcting flaring issues, and treats flares as individual sources of pollution with individual limitations on what they may emit.

## What Can You Do to Help?

Clean Air Council has outlined various recommendations that Shell and the Pennsylvania Department of Environmental Protection (PADEP) can implement. These recommendations reflect concerns raised by area residents and are based on extensive research on Shell's permit and facility. The Council urges the public to voice any concerns to local officials. Whether at township meetings, or by calling or writing your town board, we can work to improve the ethane cracker and protect public health. On the next page there is a list of decision makers that you can contact in order to ask for these important changes.

**Please join us and make your voice heard!**



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### **Vanport Township**

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**If we missed your township, more information  
can be found here:**

<http://www.beavercountypa.gov/municipalities-beaver-county>