

WHAT IS AIR QUALITY?

- Air quality is a measure of how much pollution is present in the air.

- Air quality discussed in this fact sheet focuses on constituents that have the potential to result from activities related to investigating and addressing former refinery operations.

How is air quality evaluated?

- Real-time monitoring equipment can detect airborne particulate matter and other contaminants
- Air samples can be collected in containers and sent to a laboratory for testing
- Computer modeling can be performed to simulate physical conditions and understand anticipated impacts from a source with the potential to cause impacts to indoor or outdoor air

Types of “sources” of air quality impacts and the permits they require:

- Stationary sources can include factories, refineries, boilers, landfills, power plants, and other types of facilities that emit air pollutants and are not mobile. These are classified as major or minor sources.
 - o **Major source** - must hold a Title V Permit required by Title V of the Clean Air Act that identifies what the responsible party must do to control air pollution.
 - o **Minor source** – also know as a “natural minor source” or “synthetic minor source” depending on operating conditions. These require air permits from the Pennsylvania Department of Environmental Protection or the City of Philadelphia.
- Other sources that can impact air quality include mobile sources (such as cars, buses, construction vehicles, airplanes, ships, etc). These are regulated in a different manner from stationary sources.

DEFINITIONS

Ambient air

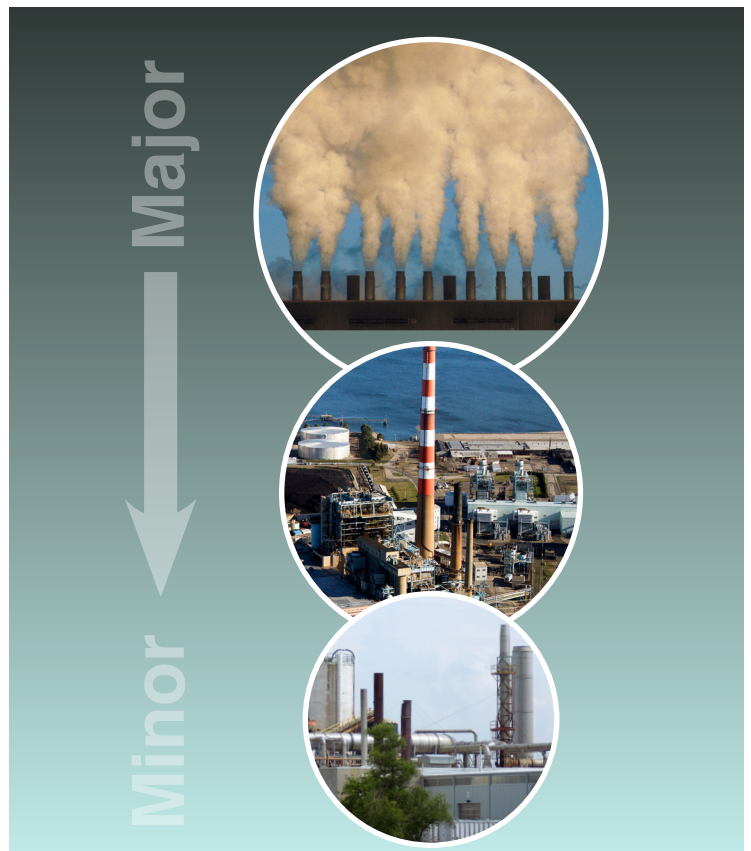
the portion of the atmosphere that is external to buildings and is breathed by the general public

Indoor air

air within a building which has the potential to impact the health of building occupants

Vapor intrusion

migration of vapor-forming chemicals from subsurface contaminated groundwater or soil into an overlying building



AIR QUALITY

Stages of the Former Philadelphia Refinery's historic operations, cleanup, and redevelopment lifecycle with the potential to impact air quality:

Former Site Use: Refinery operations (up until 2019)

- Historical air emissions from Philadelphia Refinery in operation producing fuels and basic petrochemicals, both prior to the passage of the Clean Air Act and later while operating under a Title V major source air permit to control air pollution emissions

Historic (pre-2012) Contamination, Site Investigation, and Remediation

- Residual soil contamination, dissolved groundwater contamination, or underground oil plumes – has the potential to impact indoor or outdoor air quality onsite at the Former Philadelphia Refinery or offsite depending on the contamination location. Typically, the most likely source of air quality impacts from soil and groundwater contamination would be through volatilization of contaminants from groundwater or LNAPL/oil (such as benzene or other volatile organic compounds) which can potentially lead to vapor intrusion. **Based on the known soil and groundwater conditions and initial air quality investigations at the Former Philadelphia Refinery, the environmental impacts to soil and groundwater have not shown to cause impact to indoor or outdoor air in residential areas offsite.**
- Investigation activities and remediation system construction – has the potential to impact outdoor air quality. An example is emissions from construction vehicles such as drilling rigs used for sampling activities and temporary vapors emitted from the ground during drilling or excavation.
- Remediation system operation – has the potential to impact outdoor air quality. An example of a potential impact to air quality is the discharge of vapors from a soil vapor extraction system (see graphic). As shown in the graphic, vapors that are pulled from the ground are captured and treated before discharge into the atmosphere in accordance with an air permit. Evergreen does not currently operate any soil vapor extraction systems onsite. There are other remediation systems onsite that do have air permits for treated vapor emissions. However, the air treatment is preventative and treats the potentially impacted vapors that come off of the equipment itself, such as holding tanks, oil-water separators, and piping.

Future Site Use: Redevelopment construction and future non-residential use

- May include dust generation or emissions from construction vehicles during redevelopment construction activities. Note that all future development and construction, except for Evergreen remediation systems, will be managed by the current owner/operator.

How is air quality addressed if it is identified to be harmful to human health or the environment?

- When a facility's operations generate air pollution, air pollution control equipment can capture and treat air prior to discharge to the atmosphere in accordance with a Title V or Minor Source air permit
- Groundwater and/or soil contamination that is impacting air quality can be remediated, such as through operation of an air sparging system that treats groundwater and reduces future impacts from the contamination. If a remediation system involves impacted vapors, it will be treated before it is released to the atmosphere in accordance with a Minor Source permit. A vapor mitigation system can also be installed when vapor intrusion occurs.
- Impacts from construction (dust generation, emissions from construction vehicles) can be managed by measures such as dust suppression, selection of vehicles, and procedures to minimize construction traffic or use local resources
- There are currently three remediation systems at the Former Philadelphia Refinery that either remove air from sewers in case of vapor migration from the ground into the sewers or block air movement to prevent migration of vapors offsite.

SOIL VAPOR EXTRACTION AND TREATMENT EXAMPLE

