



## State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF AIR QUALITY

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Bureau of Air Permitting

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Bureau of Air Permitting

FROM: Joel Leon, Section Chief, Air Quality Evaluation  
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SUBJECT: PAH/POM Risk Screening Worksheet

An additional level-1 risk screening worksheet is now available to evaluate risk from polycyclic aromatic hydrocarbons, or polycyclic organic matter.

The term "polycyclic organic matter" (POM) defines a broad class of compounds that generally includes all organic structures having two or more fused aromatic rings that have a boiling point greater than or equal to 212°F (100°C). The primary source of POM is combustion, and it is present in the atmosphere predominantly in particulate form. While many POM compounds can potentially be formed, only about 100 species have been identified and studied. There are eight major categories of POM, the most common being the "polycyclic aromatic hydrocarbons" (PAHs), which include benzo[a]pyrene. Table B of N.J.A.C 7:27-8 and N.J.A.C 7:27-22 lists nine PAHs under "polycyclic organic matter." However, there are 35 PAHs for which health risk data have been developed (although one of the nine in Table B has no available toxicity data). These 35 PAHs are listed in the PAH/POM risk screening worksheet.

In reviewing a source with PAH/POM emissions, the following steps should be taken in the risk assessment:

**Step 1** – Using the "NJDEP Division of Air Quality Risk Screening Worksheet for Long-Term Carcinogenic and Noncarcinogenic Effects and Short-Term Effects," the permit reviewer or applicant should conduct first-level risk screening by evaluating all PAH/POM emissions as benzo[a]pyrene.

**Step 2** - If the resulting risk fails level-1 risk screening (risk is greater than  $1 \times 10^{-6}$ ), the permit reviewer will forward a request to the Air Quality Evaluation Section (AQES) to conduct an enhanced level-1 risk screening for the PAH/POM emissions. The request must include the speciated PAH/POM compounds. Emissions of "total PAH/POM" must equal the emissions of individual PAHs listed in the PAH/POM risk worksheet. The permit reviewer must verify the reference given by the applicant for the emission factors used to speciate the PAHs. The AQES will determine the risk of each individual PAH.

**Step 3** – If the total risk in the enhanced level-1 risk screening is greater than one in a million, the AQES will notify the permit reviewer that a level-2 risk assessment is necessary.

All PAH species emitted must be accounted for in the enhanced level-1 risk screening request. This includes any PAHs that are either not named in or are below the reporting thresholds in Table B of N.J.A.C 7:27-8 and N.J.A.C 7:27-22.

All requests for enhanced PAH/POM risk screening must be sent through the permitting Section Chief to the AQES Section Chief.

These instructions will be added to the AQPP “Risk Screening Tools” web page and to eFinder.

c: Frank Steitz  
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