Louisville Metro Air Pollution Control District
Preliminary
Regulatory Impact Assessment

Regulation 5.23
Categories of Toxic Air Contaminants
Regulation 5.20
Methodology for Determining the Benchmark Ambient Concentration of a Toxic Air Contaminant

Purpose of the Draft Proposed Action:

The District is proposing to amend Regulation 5.23 by:

- Delisting ethyl acrylate as a carcinogenic Category 1 Toxic Air Contaminant (TAC) and listing it as a non-carcinogenic Category 4 TAC;
- Amending the list of Category 4 TACs to be consistent with Clean Air Act Section 112(b)(1) by listing only "phosphorous"; and
- Exempting greenhouse gases from the definition of a TAC.

If the Board adopts the proposed amendments to Regulation 5.23 and determines that ethyl acrylate should be delisted as a carcinogenic TAC, the District will revise Regulation 5.20 in accordance with section 2.5 and list "ethyl acrylate" in a new section 2.5.1.

Estimated Costs and Savings:

The STAR Program regulates emissions of TACs from Group 1 and 2 stationary sources and sources of emissions that exceed the general duty clause of Regulation 5.01. There are no costs or savings associated with the proposed amendments.

Feasibility of All Alternatives:

The District has determined that amending Regulation 5.23 as proposed is necessary for the following reasons:

Ethyl Acrylate

The District is proposing to de-list ethyl acrylate as a carcinogen pursuant to Regulation 5.20 Section 2.3. Ethyl acrylate[1] is currently listed as a Category 1 TAC[2] and evaluated for its

[1] Ethyl acrylate was monitored in the 2000 to 2001 West Louisville Air Toxics Study (WLATS) at a concentration representative of a cancer risk greater than $1.0x10^{-6}$; its non-cancer Hazard Quotient was not greater than 1.0. It is a Hazardous Air Pollutant (HAP) listed by EPA pursuant to Section 112(b) of the Clean Air Act.

[2] Category 1 TACs are those compounds monitored in the WLATS at a concentration representative of a cancer risk greater than $1.0x10^{-6}$ or a non-cancer Hazard Quotient (HQ) greater than 1.0

carcinogenic and non-carcinogenic risks under Regulation 5.21. If de-listed by the Board as a carcinogen, the District will revise Regulation 5.23 by moving ethyl acrylate from the list of Category 1 TACs to the list of Category 4 TACs[3] on the basis of its non-carcinogenic risk.

Under Regulation 5.20 section 2.1.1, a TAC is a carcinogen for purposes of the STAR Program if a carcinogenic unit risk estimate has been developed by U.S. EPA, the California Office of Environmental Health Hazard Assessment or the Michigan Air Quality Division. For ethyl acrylate, only Michigan has developed a carcinogenic unit risk estimate. In accordance with Regulation 5.20 section 3.3, the Initial Risk Screening Level (IRSL) or carcinogenic unit risk estimate of 0.07 $\mu g/m^3$ developed by the Michigan Air Quality Division on February 8, 1984, has been the BACc for ethyl acrylate.

On July 22, 2008, the Michigan Air Quality Division determined that ethyl acrylate was not a carcinogen and subsequently delisted it as such. A copy of Michigan's determination, *Screening level for Ethyl Acrylate*, Michigan Department of Environmental Quality, Ethyl Acrylate File (CAS # 140-88-5) (July 22, 2008), is included as Attachment 1.

Under the hierarchy of Regulation 5.20 sections 2.1.2 and 2.1.3, a TAC is a carcinogen for purposes of the STAR Program if designated as a "known to be a human carcinogen" or "reasonably anticipated to be a human carcinogen" in the most recent Report on Carcinogens published by the National Toxicology Program (NTP) or designated as a Group 1 (carcinogenic to humans), Group 2A (probably carcinogenic to humans), or Group 2B (possibly carcinogenic to humans) agent or mixture by the International Agency for Research on Cancer (IARC). A TAC may also be considered a carcinogen if designated as such by the Agency for Toxic Substances and Disease Registry (ATSDR) under Regulation 5.20 section 2.1.4.[4]

NTP recommended that ethyl acrylate, which had been listed since 1989 on the basis of a gavage study as "reasonably anticipated to be a human carcinogen," be removed from the 9th Report on Carcinogens. *Screening level for Ethyl Acrylate*, Michigan Department of Environmental Quality, Ethyl Acrylate File (CAS # 140-88-5) (July 22, 2008), p. 2; see also NTP's determination, *Report on Carcinogens Review Group Actions on the Nomination of Ethyl Acrylate for Delisting from the Report on Carcinogen*s, 12th Edition, Appendix B, p. 467 (available at http://ntp.niehs.nih.gov/ntp/roc/twelfth/roc12.pdf).[5] To date, IARC has not de-listed ethyl acrylate although its listing is based on the same gavage study relied upon by Michigan and NTP. *Screening level for Ethyl Acrylate*, Michigan Department of Environmental Quality, Ethyl Acrylate File (CAS # 140-88-5), p. 2.

If ethyl acrylate is not de-listed as a carcinogen, a source that emits ethyl acrylate will be required to comply with a more stringent carcinogenic standard, the default BAC_c of 0.0004 $\mu g/m^3$ under Regulation 5.20 section 3.3.5, since Michigan has withdrawn its previously developed unit risk estimate. Thus, if a company were emitting ethyl acrylate and complied with

[3] Category 4 TACs includes those HAPs that are not included in Category 1, Category 2, or Category 3 TACs.

[4] ATSDR has not designated ethyl acrylate as a carcinogen. See http://www.atsdr.cdc.gov/.

[5] The *Report on Carcinogens* is a cumulative report. It includes information on the newly reviewed substances, as well as information on all the substances listed in previous editions of the *Report on Carcinogens*. For more information, see http://www.niehs.nih.gov/about/materials/roc12fs.pdf.

an EA goal of 1 in a million using the prior BAC_c of 0.07 $\mu g/m^3$, the company would be required to reduce its emissions more than 99.5% to comply with an EA goal of 1 in a million using the default BACc of 0.0004. If de-listed, sources that emit ethyl acrylate will be required to meet the non-carcinogenic standard of 48 $\mu g/m^3$. Accordingly, emissions of ethyl acrylate will still be evaluated under the STAR Program, albeit using the BAC_{NC} rather than BAC_c.

Phosphorous Compounds

The STAR Program includes the 188 HAPs listed by EPA pursuant to Section 112(b)(1) of the Clean Air Act as the focus of Regulation 5.21, which applies to emissions of TACs from stationary sources. Consistent with section 112(b)(1) of the Clean Air Act, the District is proposing to amend section 4.2 of the regulation by listing only "phosphorus," CAS No. 7723-14-0. This would replace the current listing of "phosphorus and various phosphorus compounds."

Greenhouse Gases

"Greenhouse gases (GHGs)" means the air pollutant defined in 40 CFR 86.1818-12(a) as the aggregate group of six greenhouse gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Two of these six greenhouse gases, carbon dioxide and methane, are not considered TACs under the STAR Program; they are exempt from STAR pursuant to sections 5.2 and 5.8, respectively. The District is proposing to amend section 5 of the regulation to clarify that greenhouse gases, including nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, are not TACs for purposes of the STAR Program.

Comparison with Any Minimum or Uniform Standards:

There is no federal requirement for this administrative regulation. This administrative regulation provides for the control of emissions of toxic air contaminants.

Report on Public Outreach Efforts:

The draft proposed amendments to Regulations 5.20 and 5.23 were released for informal external review on September 26, 2011, and sent to: to all members of the 2009 STAR Advisory Group; all persons who have requested to be informed of proposed changes to STAR regulations; all persons who have requested to be notified of proposed changes to any District regulations; EPA Region 4; and the Kentucky Division for Air Quality.

The public will have an opportunity to comment at a meeting of the appropriate committee of the Air Pollution Control Board, during the formal public comment period, and at a public hearing prior to consideration by the full Board.