May 8th, 2019

**FACT SHEET**

**Revision to NJDEP Division of Air Quality Risk Screening Worksheet for Carcinogenic Effects and Noncarcinogenic Long-Term and Short-Term Effects (Worksheet) as Listed in Technical Manual 1003 "Guidance on Preparing a Risk Assessment for Air Contaminant Emissions"**

> **NOTE:** The draft Worksheet is available for review on the Department's website at http://www.state.nj.us/dep/aqpp under "Program Update" and at http://www.nj.gov/dep/baqp under "What's New." This Worksheet is an optional tool that regulated facilities can use to demonstrate negligible risk without conducting a refined risk assessment, pursuant to N.J.A.C. 7:27-8.5, for Preconstruction Permits, and N.J.A.C. 7:27-22.8, for Operating Permits. Facilities may choose to initially determine health risks with a refined risk assessment and not use the Worksheet.

The following outlines the proposed changes to the revised draft Worksheet along with background information used to support the change:

1. **The minimum stack height for sources to use the Worksheet has been raised from 10 feet to 15 feet.**

   The Department concluded that source operations with stack heights less than 15 feet should not use the Worksheet and should have their potential health risks evaluated on a case-by-case basis. Stacks heights less than 15 feet do not provide sufficient dispersion and, therefore, would require refined risk assessment.

   The change to the stack height restriction should not significantly impact the average time and resources needed to obtain an Air Pollution Control Permit as most stacks are already above 15 feet tall.

2. **Sulfuryl fluoride (SF) has been added to the Worksheet with the following reference concentrations: Averaging time of 24 hours 1,700 micrograms per cubic meter (µg/m$^3$); and Long-term or chronic 60 µg/m$^3$.**

   Based on the SF's high toxicity and its significant use in fumigation operations and to ease burden on facilities which use the compound, SF has been added to the Worksheet.

   The California Environmental Protection Agency is the source of the sulfuryl fluoride 24-hour and long-term/chronic reference concentrations. Additional information on the development of these concentrations can be found at "Sulfuryl Fluoride (Vikane) Risk Characterization Document, Volume II, Exposure Assessment, June, 2006," CalEPA (https://www.cdpr.ca.gov/docs/emon/pubs/tac/tacpdfs/sulfluor/final_rcd_vol2.pdf) and "Establishing Sulfuryl Fluoride Uncertainty Factors for Acute and Short-term Exposures, March 3, 2017, " CalEPA (https://www.cdpr.ca.gov/docs/risk/rcd/establishing_sulfuryl_fluoride.pdf).

3. **Carbonyl Sulfide has been added to the Worksheet with the following reference concentrations: Averaging time of 24 hours 660 micrograms per cubic meter (µg/m$^3$); and Long-term or chronic 10 µg/m$^3$.**

   Although carbonyl sulfide had been designated as a hazardous air pollutant (HAP) by the USEPA and is listed in N.J.A.C. 7:27-17 "Control and Prohibition of Air Pollution by Toxic Substances and Hazardous Air Pollutants," it was not previously included in the Worksheet due to a lack of published toxicity values. Health impacts associated with carbonyl sulfide include developmental impairments to organs and neurological/nervous system impairment. CalEPA issued the Reference Concentrations for carbonyl sulfide on February 21, 2017.

4. **1-bromopropane (n-propyl bromide or nPB) has been added to the Worksheet with the following reference concentrations: Averaging time of 24 hours 5,030 micrograms per cubic meter (µg/m$^3$); and Long-term or chronic 101 µg/m$^3$.**

   Based on the nPB's high toxicity and its potential for significant use in dry cleaning and other commercial operations and to ease the burden on facilities which use the compound, nPB has been added to the Worksheet.

   The Agency for Toxic Substances and Disease Registry (ATSDR), which is part of the U.S. Department of Health and Human Services, issued Reference Concentrations for short- and long-term non-carcinogenic health impacts in August 2017. The ATSDR's website is https://www.atsdr.cdc.gov/. nPB exposure can cause neurological and nervous system disorders. Health studies also show that nPB emissions can result in reproductive and developmental effects and carcinogenicity. Although nPB is not listed by the USEPA as a HAP, there are numerous government studies, and academic and clinical reports that demonstrate that nPB potential health impacts should be evaluated when a facility proposes to emit the substance to the ambient air.

   Several nPB Unit Risk Factors (URF) for carcinogenic impacts have been developed but have not been finalized. Once a URF has been formally adopted by a recognized source, the Department will propose its inclusion in the Worksheet.

**5. Clarification to the URF associated with nickel and nickel containing compounds**

Nickel compounds, like nickel refinery dust and nickel subsulfide, are listed in N.J.A.C. 7:27-17.9(b) Table 2 with corresponding reporting thresholds. However, these nickel compounds are not specifically listed in the Worksheet. The Department is clarifying the risk screening of these two nickel compounds by adding their corresponding URFs. An URF of 2.4E-04 $(\mu g/m^3)^{-1}$ will be listed for nickel refinery dust and an URF of 4.8E-04 $(\mu g/m^3)^{-1}$ will be listed for nickel subsulfide. The nickel and compounds listed URF in the spreadsheet will change to 4.8E-04 $(\mu g/m^3)^{-1}$, which is the most stringent listed URF for any nickel compound.

**6. "Toxicity Values for Inhalation Exposures" updates**

The following table "Updated Toxicity Values" outlines the air toxics whose toxicity values have been updated, type of toxicity value, the current and proposed toxicity values, and the source and issuance date of the proposed toxicity values.

**Updated Toxicity Values**

| **Air Toxic** | **Type of toxicity value-*** | **Toxicity Value** | | **Source, Date Proposed by Source, Comment - **** |
|---|---|---|---|---|
| | | Current | Proposed | |
| Benzo(a)pyrene | URF<br><br>RfC | 1.1E-03<br><br>N/A | 6.0E-04<br><br>2.0E-03 | IRIS, 1/19/2017, Current URF value is from CalEPA,<br>No current RfC value |
| Trimethylbenzene-*** (1,2,3), (1,2,4), (1,3,5) | RfC | 7.0E+00 | 6.0E+01 | IRIS, 9/9/2016, EPA has stated that toxicity values applies to all isomers, Current RfC is a USEPA value |
| Ethylene oxide | URF | 3.0E-03 | 5.0E-03 | IRIS, 12/16/2016, Applying the age-dependent adjustment factors to obtain a full lifetime total cancer unit risk estimate |
| 1-bromopropane<br><br>(n-propyl bromide) | RfC<br><br>$RfC_{st}$ | N/A<br><br>N/A | 1.01E+02<br><br>5.03E+03 | ATSDR, 8/2017, Proposed $RfC_{st}$ is a 24-hour average,<br>No current RfC or $RfC_{st}$ |
| Chlordane | RfC | 7.0E-01 | 2.0E-02 | ATSDR, 2/2018, Current RfC is a value from IRIS |
| Glutaraldehyde | $RfC_{st}$ | N/A | 4.1E+00 | ATSDR, 7/2017, Proposed $RfC_{st}$ is a 24-hour average, No current $RfC_{st}$ value |
| Hydrogen sulfide | $RfC_{st}$ | 4.2E+01 | 9.8E+01 | ATSDR, 11/2016, Proposed $RfC_{st}$ is a 24-hour average, Current $RfC_{st}$ is a 1-hour average value from CalEPA |

| Air Toxic | Type of toxicity value-* | Toxicity Value | | Source, Date Proposed by Source, Comment - ** |
|---|---|---|---|---|
| | | Current | Proposed | |
| Toluene | RfC<br>$RfC_{st}$ | 5.0E+03<br>3.7E+04 | 3.76E+03<br>7.52E+03 | ATSDR, 6/2017, Current RfC value is from IRIS<br>Proposed $RfC_{st}$ is an ATSDR 24-hour average, Current $RfC_{st}$ is a 1-hour average value from CalEPA |
| toluene diisocyanate-*** (2,4- and 2,6-) | RfC<br>$RfC_{st}$ | 7.0E-02<br>1.4E+01 | 8.0E-03<br>2.0E+00 | CalEPA, 3/28/2016, Current RfC value is from IRIS, Proposed $RfC_{st}$ is a 1-hour average, Current $RfC_{st}$ is a 1-hour average AEGL value |
| methylene diphenyl diisocyanate (4,4-) | RfC<br>$RfC_{st}$ | 6.0E-01<br>N/A | 8.0E-02<br>1.2E+01 | CalEPA, 3/28/2016, Current RfC value is from IRIS,<br>Proposed $RfC_{st}$ is a 1-hour average, No current $RfC_{st}$ value |
| tetrachloroethylene (Perchloroethylene) | URF | 5.9E-06 | 6.1E-06 | CalEPA, 9/8/2016, Current URF value is from CalEPA |
| Carbonyl sulfide | RfC<br>$RfC_{st}$ | N/A<br>N/A | 1.0E+01<br>6.6E+02 | CalEPA, 2/21/2017, Proposed $RfC_{st}$ is a 1-hour average, No current RfC or $RfC_{st}$ |
| Ethylene glycol mono-n-butyl ether | RfC<br>$RfC_{st}$ | 1.6E+03<br>1.4E+04 | 8.2E+01<br>4.7E+03 | CalEPA, 5/4/2018, Current RfC value is from IRIS, Proposed $RfC_{st}$ is a 1-hour average, Current $RfC_{st}$ is a 1-hour average value from CalEPA |
| Phosphine | $RfC_{st}$ | N/A | 7.0E+01 | CalEPA, 6/13/2014, Proposed $RfC_{st}$ is a 24-hour average, No current $RfC_{st}$ |
| Sulfuryl fluoride | RfC<br>RfCst | N/A<br>N/A | 6.0E+01<br>1.7E+03 | CalEPA, 3/03/2017, Proposed $RfC_{st}$ is a 24-hour average, No current RfC or $RfC_{st}$ |

* URF – Unit Risk Factor – (microgram per cubic meter - $\mu g/m^3)^{-1}$
RfC – Reference concentration – $\mu g/m^3$
$RfC_{st}$ – Reference concentration, short-term – $\mu g/m^3$

** Cal EPA – California Environmental Protection Agency, Office of Environmental Health Hazard Assessment
IRIS – United States Environmental Protection Agency, Integrated Risk Information System
ATSDR – Agency for Toxic Substances and Disease Registry, U.S. Department of Health and Human Services
AEGL – Acute Exposure Level Guideline

*** Toxicity values apply to each isomer or a combination of any isomer mixture, whichever is higher