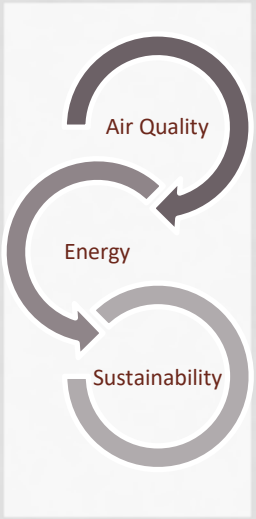
DIVISION OF AIR QUALITY

AIR QUALITY, ENERGY, AND SUSTAINABILITY

RISK SCREENING WORKSHEET UPDATE

INDUSTRIAL STAKEHOLDERS GROUP

OCTOBER 2, 2020



Nicholle Worland, Bureau of Evaluation and Planning

RISK SCREENING WORKSHEET –UPDATE –

- New Risk Screening Worksheet was posted June 30, 2020
- The new version was proposed for public comment on May 8, 2019
- Public Period initially closed June 10, 2019

Check the NJDEP website for Updates

https://www.state.nj.us/dep/aqpp/risk.html

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DEP Home | BoSS Home | About DEP | Index by Topic | Programs/Units | DEP Online

- Bureau of Stationary Sources Home
- AQES Home
- DAQ Home
- Air Permit Information
- Applications and Forms
- General Permits
- Online Permitting Help
- Permitting Guidance
- Enhanced Public Notification
- Public Notices
- RADIUS Information
- RADIUS
- RADIUS FAQ
- RADIUS Reference Tables
- Program Information
- Annual Combustion Adjustment
- Air Quality Forecast for Emergency Generators
- Emission Statement Program
- RGGI Implementation in Air Permitting
- Risk Assessment Guide

Risk Screening Tools

Estimating Risk from Air Toxics

The NJDEP Air Quality Permitting Program uses risk assessment to evaluate potential effects on public health from facilities seeking permits to emit air toxics. An overview of the risk assessment process can be found in Technical Manual 1003, which also includes details on preparing a risk assessment. However, many permit applications can be evaluated using a risk screening worksheet. Information on risk assessment for various types of emissions can be found below.

- Technical Manual 1003: Guidance on Preparing a Risk Assessment Protocol for Air Contaminant Emissions
- Procedures to Conduct Risk Assessments to Determine the Incremental Health Risks from New or Modified Equipment

Risk Screening Tools for Air Quality Permits

Description	Format	Updated
Cancer Risk Screening Worksheet for Nonroad Diesel Engines	MS Excel	7/15
Development of the Risk Screening Worksheet for Nonroad Diesel Engines	Adobe Pdf	7/15
Revisions to the NJDEP/DAQ Risk Screening Worksheet	Adobe Pdf	6/20
NJDEP Division of Air Quality Risk Screening Worksheet for Long-Term Carcinogenic and Noncarcinogenic Effects and Short-Term Effects	MS Excel	6/20
Methodology and Assumptions Used to Generate the Revised Level-1 Air Impact Values	Adobe Pdf	4/07
Risk Screening Policy and Second-Level Risk Screening	Adobe Pdf	6/07
Toxicity Values for Inhalation Exposure	Adobe Pdf	6/20
Risk Screening for PAH/POM	Adobe Pdf	1/13

REVISIONS TO THE NJDEP/DAQ RISK SCREENING WORKSHEET

New Jersey Department of Environmental Protection
Division of Air Quality
Bureau of Evaluation and Planning
Air Quality Evaluation Section

REVISIONS TO THE NJDEP/DAQ INHALATION TOXICITY VALUES AND THE RISK SCREENING WORKSHEET
June 2020

The NJDEP Division of Air Quality list of inhalation toxicity values and the risk screening worksheet have been updated.

Specific changes to the unit risk factors (URFs), long-term reference concentrations (RfCs), and short-term RfCs are noted below. The revisions are incorporated into the list of "Toxicity Values for Inhalation Exposure," dated June 2020. This replaces the list dated August 2018. The list, which includes references, can be found at www.nj.gov/dep/aqpp/risk.html.

* Changes implemented on June 2020.

Unit Risk Factors

Changes (all values are in units "per µg/m^3")
Benzo(a)pyrene – Changed from 1.1E-3 (Cal 11) to 6.0E-4 (IRIS) *
Ethylene oxide – Changed from 3E-3 (IRIS) to 5E-3 (IRIS) *
Nickel and compounds – Changed from 2.4E-4 (IRIS) to 4.8E-4 (IRIS) *
Tetrachloroethylene – Changed from 5.9E-6 (Cal 11) to 6.1E-6 (Cal 18) *
Ethylene oxide – Changed from 8.8E-5 (Cal 11) to 3E-3 (IRIS)
Chloroprene – Corrected from 3E-4 (IRIS) to 5E-4 (IRIS)
1,4-Dioxane - Changed from 7.7E-6 (IRIS) to 5E-6 (IRIS)
Hexachloroethane – Changed from 4E-6 (IRIS, deleted) to 1.1E-5 (Cal 15b)
Methylene chloride – Changed from 4.7E-7 (IRIS) to 1.3E-8 (IRIS)
Trichloroethylene – Changed from 2E-6 (Cal) to 4.8E-6 (IRIS)

JUNE 2020 RISK SCREENING WORKSHEET

NJDEP DIVISION OF AIR QUALITY RISK SCREENING WORKSHEET
For Long-Term Carcinogenic and Noncarcinogenic Effects and Short-Term Effects
June 2020

Read the Instructions tab carefully before completing this spreadsheet.

Date	
Facility ID No.	
Activity ID No.	
Facility name	
Facility location	
File name (.xls)	

Emission Unit/Batch Process ID No.		Stack height[1]	ft
Emission Point ID No.		Distance to property line	ft
Equipment ID No(s).		Annual air impact value, C'	(ug/m³)/(ton/yr)
Operating Scenario(s)		1-hour air impact value, C'st	(ug/m³)/(lb/hr)

KEY:

Long-Term Effects

- **Q** = Annual emission rate (in tons per year) contributed from the source
- **C** = C' x Q = Annual average ambient air concentration
- **URF** = Unit risk factor (for carcinogenic risk)
- **IR** = C x URF = Incremental risk (for carcinogen)
- **RfC** = Reference concentration (for noncarcinogenic effects)
- **HQ** = C/RfC = Hazard quotient (for noncarcinogenic risk)
- **RsIt** = The result of comparing the IR or HQ to the negligible threshold (FER if > threshold, Negl. if <= threshold)
- **FER** = Further Evaluation Required (See Notes for thresholds)
- **Negl.** = Negligible (See Notes for thresholds)

Short-Term Effects

- **Q_h** = Hourly emission rate (in pounds per hour)
- **C_{st}** = C'_{st} x Q_h = Short-term average ambient air concentration
- **RfC_{st}** = Short-term reference concentration (for noncarcinogenic effects)
- **HQ_{st}** = C_{st}/RfC_{st} = Hazard quotient for short-term noncarcinogenic effects
- **RsIt** = The result of comparing the HQ_{st} to the negligible threshold (FER if > threshold, Negl. if <= threshold)
- **FER** = Further Evaluation Required (See Notes for thresholds)
- **Negl.** = Negligible (See Notes for thresholds)

[1] When evaluating risk for diesel engines, use the equivalent stack height consistent with the memo dated June 10, 2009.
Click here to view the "Stack Height Equivalents for Use in First Level Screening Analyses for Diesel Engines" memo.

				LONG-TERM EFFECTS								SHORT-TERM EFFECTS				
	HAP	CAS No.	Air Toxic	Q (ton/yr)	C (ug/m³)	URF [(ug/m³)⁻¹]	IR	RsIt	RfC (ug/m³)	HQ	RsIt	Q_h (lb/hr)	C_{st} (ug/m³)	RfC_{st} (ug/m³)	HQ_{st}	RsIt
1	*	75070	Acetaldehyde			2.2E-06			9					470		
2	*	60355	Acetamide			2.0E-05										
3		67641	Acetone						31000					62000		
4		75865	Acetone cyanohydrin						2							
5	*	75058	Acetonitrile						60							
6	*	98862	Acetophenone						0.02							
7	*	53963	Acetylaminofluorene (2-)			1.3E-03										
8	*	107028	Acrolein						0.02					2.5		
9	*	79061	Acrylamide			1.0E-04			6							

Instructions | Risk | CAS Index

TOXICITY VALUES FOR INHALATION EXPOSURE

New Jersey Department of Environmental Protection
Division of Air Quality
Bureau of Evaluation and Planning - Air Quality Evaluation Section

TOXICITY VALUES FOR INHALATION EXPOSURE
June 2020

	HAP	CAS No.	Air Toxic	Unit Risk Factor (URF) [/(ug/m³)]	Benchmark Concentration (ug/m³)	Cancer Class USEPA	Cancer Class IARC	URF Source	Reference Concentration (RfC) (ug/m³)	RfC Source	Short-Term RfC (ug/m³)	Averaging Time (Hr)	Short-Term RfC Source	Comment
1	**	208968	Acenaphthalene	1.1E-06	9.1E-01			N&L						PAH
2	**	83329	Acenaphthene	1.1E-06	9.1E-01		3	N&L						PAH
3	*	75070	Acetaldehyde	2.2E-06	4.5E-01	B2	2B	IRIS	9	IRIS	470	1	Cal 14	
4	*	60355	Acetamide	2.0E-05	5.0E-02		2B	Cal 11						
5		67641	Acetone						31000	ATSDR	62000	24	ATSDR	See Notes 1 & 2.
6		75865	Acetone cyanohydrin						2	USEPA 14				
7	*	75058	Acetonitrile						60	IRIS				
8	*	98862	Acetophenone						0.02	HEAST 92				
9	*	53963	Acetylaminofluorene (2-)	1.3E-03	7.7E-04			Cal 15b						
10	*	107028	Acrolein						0.02	IRIS	2.5	1	Cal 14	
11	*	79061	Acrylamide	1.0E-04	1.0E-02	B2	2A	IRIS	6	IRIS				
12	*	79107	Acrylic acid						1	IRIS	6000	1	Cal 14	
13	*	107131	Acrylonitrile	6.8E-05	1.5E-02	B1	2B	IRIS	2	IRIS				
14		309002	Aldrin	4.9E-03	2.0E-04	B2	3	IRIS						
15	*	107051	Allyl chloride	6.0E-06	1.7E-01	C	3	Cal 11	1	IRIS				
16		117793	Aminoanthraquinone (2-)	9.4E-06	1.1E-01		3	Cal 11						
17	*	92671	Aminobiphenyl (4-)	6.0E-03	1.7E-04		1	Cal 15b						
18		7664417	Ammonia						100	IRIS	3200	1	Cal 14	
19	*	62533	Aniline	1.6E-06	6.3E-01	B2	3	Cal 11	1	IRIS	3000	1	AEGL	See Note 3.
20	*	90040	Anisidine (o-)	4.0E-05	2.5E-02		2B	Cal 15b						
21	**	120127	Anthracene	1.1E-05	9.1E-02		3	N&L						PAH
22	**	1309644	Antimony trioxide						0.2	IRIS				
23		140578	Aramite	7.1E-06	1.4E-01	B2	2B	IRIS						
24	*		Arsenic (inorganic)	4.3E-03	2.3E-04	A	1	IRIS	0.015	Cal 14	0.2	1	Cal 14	RfC does not apply to arsine.
25	**	7784421	Arsine						0.05	IRIS				
26	*	1332214	Asbestos	7.7E-03	1.3E-04	A	1	IRIS						See Note 4.
27		103333	Azobenzene	3.1E-05	3.2E-02	B2	3	IRIS						
28			Barium								0.5	24	HEAST 97	
29	**	56553	Benz(a)anthracene	1.1E-04	9.1E-03	B2	2B	Cal 11						PAH
30	*	71432	Benzene	7.8E-06	1.3E-01	A	1	IRIS	3	Cal 14	27	1	Cal 14	
31	*	92875	Benzidine	6.7E-02	1.5E-05	A	1	IRIS						
32	**	50328	Benzo(a)pyrene	6.0E-04	1.7E-03	A	1	IRIS	0.002	IRIS				See Note 5.
33	**	205992	Benzo(b)fluoranthene	1.1E-04	9.1E-03	B2	2B	Cal 11						PAH
34	**	191242	Benzo(g,h,i)perylene	1.1E-05	9.1E-02		3	N&L						PAH
35	**	205823	Benzo(j)fluoranthene	1.1E-04	9.1E-03		2B	Cal 11						PAH
36	**	207089	Benzo(k)fluoranthene	1.1E-04	9.1E-03	B2	2B	Cal 11						PAH
37	*	98077	Benzotrichloride	3.7E-03	2.7E-04	B2	2A	IRIS (oral)						URF is based on converted oral data.
38	*	100447	Benzyl chloride	4.9E-05	2.0E-02	B2	2A	Cal 11			240	1	Cal 14	Chloromethylbenzene
39	*		Beryllium	2.4E-03	4.2E-04	B2	1	IRIS	0.02	IRIS				
40	*	92524	Biphenyl (1,1-)						0.4	USEPA 14				
41		108601	Bis(2-chloroisopropyl)ether	1.0E-05	1.0E-01	C	3	HEAST 97						
42	*	117817	Bis(2-ethylhexyl)phthalate	2.4E-06	4.2E-01	B2	2B	Cal 11						DEHP, diethylhexyl phthalate
43	*	542881	Bis(chloromethyl)ether	6.2E-02	1.6E-05	A	1	IRIS						
44		7440428	Boron (elemental)						20	HEAST 97				

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NJ Home | Services A to Z | Departments/Agencies | FAQs

Search All of NJ

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DEP Home | BoSS Home | About DEP | Index by Topic | Programs/Units | DEP Online

- Bureau of Stationary Sources Home
- AQES Home
- DAQ Home
- Air Permit Information
- Applications and Forms
- General Permits
- Online Permitting Help
- Permitting Guidance
- Enhanced Public Notification
- Public Notices
- RADIUS Information
- RADIUS
- RADIUS FAQ
- RADIUS Reference Tables
- Program Information
- Annual Combustion Adjustment
- Air Quality Forecast for Emergency Generators
- Emission Statement Program
- RGGI Implementation in Air Permitting
- Risk Assessment Guide
- State of the Art

The Bureau of Stationary Sources is responsible for permitting stationary sources of air pollution (e.g., factories, power plants, etc.) - both old sources (those already constructed) and newer facilities - to ensure they do not adversely affect air quality in your neighborhood or anywhere in the state.

To accomplish this, the staff of BoSS reviews air pollution control permit applications, evaluates air quality impact and health risks.

Program Update

Final Revised Risk Screening Worksheet for Long-Term Carcinogenic and Noncarcinogenic Effects and Short-Term Effects - June 2020

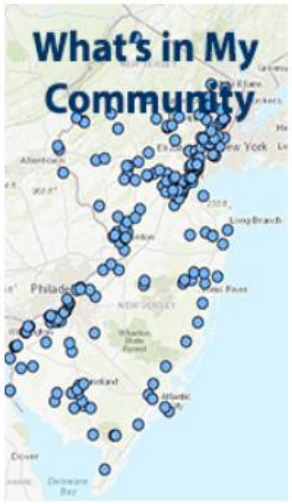
- Risk Screening Worksheet Response to Comments Document
- Final Revised Risk Screening Worksheet Fact Sheet

Continental Shelf Air Rules Adoption

General Permit GP-009B

Minor Air Facilities Fee Schedule – Effective 1/1/2020-12/31/2024

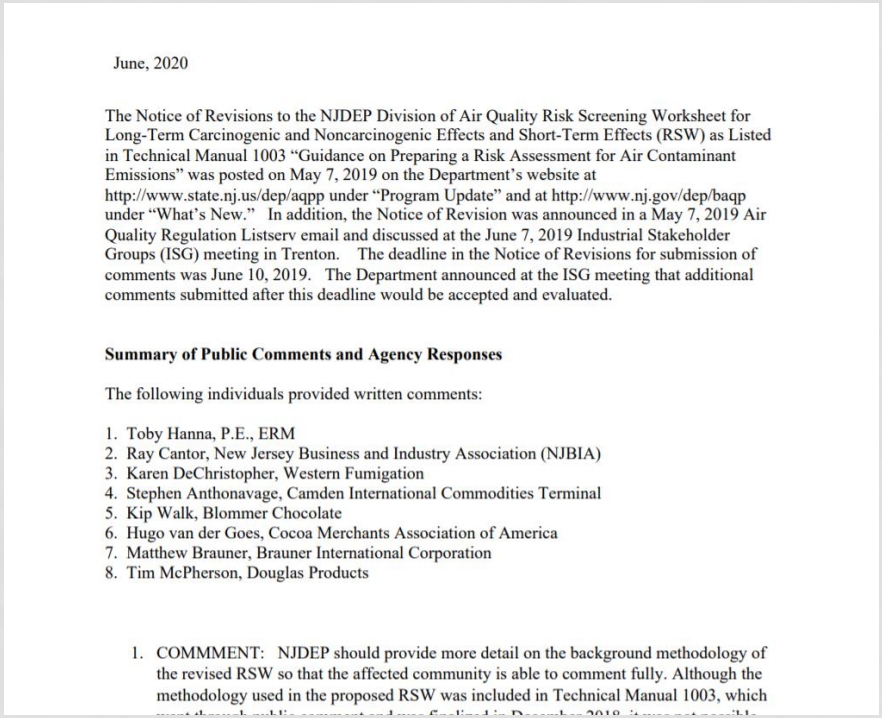
Community Corner



Other Programs of Interest

- Air Compliance and Enforcement
- Air Quality, Energy and Sustainability
- Air Regulations
- Air Toxics & MACT
- Bureau of Air Quality Monitoring
- Bureau of Evaluation and Planning

BACKGROUND DOCUMENTS



June, 2020

The Notice of Revisions to the NJDEP Division of Air Quality Risk Screening Worksheet for Long-Term Carcinogenic and Noncarcinogenic Effects and Short-Term Effects (RSW) as Listed in Technical Manual 1003 "Guidance on Preparing a Risk Assessment for Air Contaminant Emissions" was posted on May 7, 2019 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." In addition, the Notice of Revision was announced in a May 7, 2019 Air Quality Regulation Listserv email and discussed at the June 7, 2019 Industrial Stakeholder Groups (ISG) meeting in Trenton. The deadline in the Notice of Revisions for submission of comments was June 10, 2019. The Department announced at the ISG meeting that additional comments submitted after this deadline would be accepted and evaluated.

Summary of Public Comments and Agency Responses

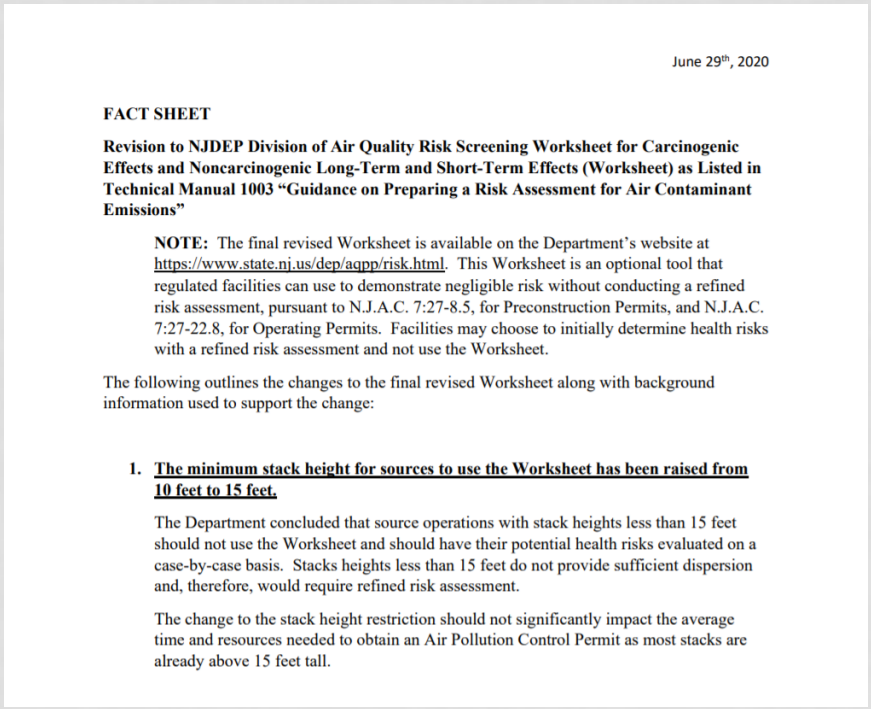
The following individuals provided written comments:

1. Toby Hanna, P.E., ERM
2. Ray Cantor, New Jersey Business and Industry Association (NJBIA)
3. Karen DeChristopher, Western Fumigation
4. Stephen Anthonavage, Camden International Commodities Terminal
5. Kip Walk, Blommer Chocolate
6. Hugo van der Goes, Cocoa Merchants Association of America
7. Matthew Brauner, Brauner International Corporation
8. Tim McPherson, Douglas Products

1. COMMMENT: NJDEP should provide more detail on the background methodology of the revised RSW so that the affected community is able to comment fully. Although the methodology used in the proposed RSW was included in Technical Manual 1003, which

Response to Comments

Fact Sheet



June 29th, 2020

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 final revised Worksheet is available on the Department's website at https://www.state.nj.us/dep/aqpp/risk.html. 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 changes to the final revised 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.

RISK SCREENING WORKSHEET –UPDATE–

- Revisions Made
  - Minimum stack height raised from 10 to 15 feet
  - Carbonyl sulfide, and 1-bromopropane (n-propyl bromide) have been added to the Worksheet
  - Change from proposal: Sulfuryl Fluoride not added – will be added when California EPA finalizes their standard, anticipated early 2021
  - Revised Toxicity Values 12 additional Air Toxics

RISK SCREENING WORKSHEET –UPDATE–

- Updated RSW output is more protective of public health than previous RSW
  - Resulting from updated meteorological data and AERMOD program
  - Updated toxicity values

CONTACT INFORMATION

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