

# **MDEQ-AQD Air Toxics Rules Overview and Previous AQD Air Toxics Rules Initiatives**

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**Air Toxics Workgroup 1<sup>st</sup> Meeting**

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# Presentation Format

- **Air Toxics Rules Overview**
- **Q & A**

**BREAK**

- **Previous AQD Air Toxics Rules Initiatives**
- **Q & A**

# 1. Air Toxics Rules Overview

## OUTLINE:

- Overview of State and Federal programs
- NREPA and Key Definitions
- Permit To Install (PTI) New Source Review (NSR)
- Permit Exemptions
- Air Toxics Rules: R224-232
- Health-Based Screening Levels (SLs)
- Demonstrating Compliance with the SLs

# Michigan's Program (Rules 224 – 232)

- **Applies to new or modified processes**
- **Technology Requirement**
  - **Reasonably achievable based on:**
    - **Economic Impact**
    - **Energy Impact**
    - **Environmental Impact**
  - **Specific exemptions, including federal program**
- **Health Risk Assessment - Screening Levels**
  - **SLs apply to all areas with public access (ambient air)**
  - **Higher cancer-based SLs for industrial property**
  - **Levels developed by toxicologists based upon methodology in the rules**
  - **Specific exemptions, including federal program & small quantities of non-carcinogens**

# **Federal Program (Section 112 of Clean Air Act)**

- **Applies to new and existing sources**
- **List of 187 Hazardous Air Pollutants (HAPs)**
- **Technology Requirements**
  - **170 specific standards developed since 1990**
  - **Case-by-Case Technology Determination for sources of HAPs greater than 10 TPY of a HAP or 25 TPY total HAPs**
- **Health Assessments**
  - **32 source category Assessment Reviews for HAPs completed since 1990**
  - **Remainder of categories not yet completed**

# What are Air Toxics?

## State program:

- Toxic air contaminants (TACs) are defined as any substance which may be harmful at some concentration and duration, excluding 41 substances which either have national air quality standards (ozone, lead, SO<sub>2</sub>, NO<sub>2</sub>, PM, CO) or which are relatively nontoxic.
- (Air Pollution Control Rules, Part 55 of NREPA; Rule 336.1120(f))
- AQD has set health-based screening levels for approx. 1100 TACs.

Federal program: EPA CAAA of 1990 identifies 187 HAPs (chemicals or chemical groups)

# **NREPA and Key Definitions**

**Natural Resource and Environmental Protection Act (NREPA) Act 451 of the Public Acts of 1994**

- **Part 55: Air Pollution Control**
- **“Air Contaminant”**: dust, fume, gas, mist, odor, smoke, vapor, or any combination thereof.
- **“Air Pollution”**: outdoor air contaminants in quantities, conditions, and durations that are or can become injurious to human health, welfare, animal life, plant life, or property in MI; excludes worker health/safety, normal farming operations. For modes of transportation, not to be inconsistent with federal regulations.

# NREPA and Key Definitions

- **Section 5505:** The department shall promulgate rules to establish a permit to install program, applicable to each new or modified process or process equipment that emits or may emit an air contaminant.
- **Section 5508:** If a source is subject to a control technology standard for air toxics under the Clean Air Act (112d), then they are not subject to the State control technology requirement (T-BACT). If a source is subject to a federal residual risk standard (112f), then they are not subject to the State's SLs for the federal hazardous air pollutants (HAPs; n=187).
- **T-BACT:** Best available control technology for toxics

# **NREPA and Key Definitions**

- **Section 5510: MDEQ may deny a permit to install if the source would violate Part 55 of NREPA or rules promulgated under Part 55, or if it presents or may present an imminent and substantial endangerment to human health, safety, or welfare, or the environment.**
- **Section 5512: MDEQ shall promulgate rules for controlling or prohibiting air pollution.**

# Permit To Install (PTI) New Source Review (NSR): Key Definitions

- **“Carcinogen”(Rule 103(c)):** evidence of increased incidence of tumors in at least one well-conducted animal bioassay or human epidemiology study.
- **“Initial Risk Screening Level” (Rule 109(c)) (IRSL):** carcinogen ambient air concentration with an estimated lifetime cancer risk of 1 in 1 million.
- **“Secondary Risk Screening Level” (Rule 119(c)) (SRSL):** carcinogen ambient air concentration with an estimated lifetime cancer risk of 1 in 100,000.

# Permit To Install (PTI) New Source Review (NSR): Key Definitions

- **“Initial Threshold Screening Level” (Rule 109(d)) (ITSL):** an ambient air concentration that is used to evaluate noncarcinogenic health effects, as determined by Rules 229 and 232.
- **“Toxic Air Contaminant” (Rule 120(f)) (TAC):** any air contaminant which is or may become harmful to the public health or environment when present in the outdoor air in sufficient quantities and duration, excluding 41 listed substances (includes the 6 EPA criteria pollutants, relatively low toxicity or low concern substances).

# Permits to Install (PTI) and Permit Exemptions

- “Permit to Install” (Rule 116(f)): A permit authorizing the construction, installation, relocation, or alteration of any process, fuel-burning, refuse-burning, or control equipment.
- Permit to Install Exemptions: Rules 278-290 describe a variety of processes or situations that are not required to have a Permit to Install (and are therefore exempt from the air toxics rules, etc.). **The AQD is initiating a stakeholder workgroup to review these rules.**

# Air Toxics Rules: R224-232

- R224 = T-BACT requirement (Best Available Control Technology for Toxics)

## Exemptions from the T-BACT requirement

- Units with a federal CAA standard (112(d), 112(g), 112(j))
- Small emissions of TACs with relatively low potency
- VOC emission sources which must comply with Rule 702 (Best Available Control Technology (BACT))

**ORR RECOMMENDATION: RESCIND PART OF R224: VOCs and R702**

# Air Toxics Rules: R224-232

- **R225: Health-based SL requirement. TAC emissions from a proposed new or modified emission unit or units cannot have a maximum predicted ambient impact (PAI) exceeding an ITSL or IRSL. If an IRSL cannot be met, a SRSL cannot be exceeded based on facility-wide emissions. Impacts on roads and industrial property can be 10X the IRSL or SRSL.**

**ORR RECOMMENDATIONS: SEVERAL FOR R225**

# **Air Toxics Rules: R224-232, cont'd**

**R226: Exemptions from the R225 SL requirement:**

- **Small quantity TAC emissions (excludes carcinogens and high concern noncarc.)**
- **HAPs from emission units subject to a federal residual risk-based MACT standard (CAA 112(f))**
- **Air toxics emissions regulated by EPA by 11/14/90**
- **TAC emissions that are demonstrated (case-by-case) to not cause or contribute to injurious effects or unreasonable aesthetic effects (i.e., R901), considering all relevant scientific information (R226(d)).**

# Complimentary Programs

## Federal Program

## Michigan Program

Federal Technology Standard,  
Federal Health Assessment  
Done

Tech  
Std

Health  
Std for  
HAPS

Health  
Std for  
Non  
HAPS

Federal Technology  
Standard, No Health  
Assessment

Tech  
Std

Health  
Std for  
all TACs

No Federal Technology  
Standard, No Federal  
Health Assessment

Tech  
Std

Health  
Std for  
All TACs

# **Air Toxics Rules: R224-232, cont'd**

- **R227: Demonstration of compliance with SLs, using any 1 of 3 approaches:**
  - **Use the Allowable Emission Rate (AER) algorithms**
  - **Use the Ambient Impact Ratio (AIR) matrix**
  - **Use the current air dispersion models (AERSCREEN, SCREEN3 or AERMOD) and the maximum hourly emission rate**

**For intermittent emissions, the average emission rate may be used, within limits.**

# **Air Toxics Rules: R224-232, cont'd**

**R228: Requirement for lower emission rate than required by T-BACT and SLs**

- **On a case-by-case basis, the department may determine a lower maximum allowable emission rate in order to ensure adequate protection of human health or the environment, considering all relevant scientific information, such as atmospheric deposition, indirect routes of exposure, or additive effects.**
- **This authority has been used to request some applicants to include deposition modeling or multipathway risk assessment information in their applications, and for staff to perform further evaluations for the public and the decision-maker.**

**ORR RECOMMENDATION: RESCIND R228**

# **Air Toxics Rules: R224-232, cont'd**

**R229: Methodology for determining SLs**

**- SLs shall be determined by the methodologies in Rules 231-232, or, alternative methods that are more appropriate as supported by the scientific data.**

**R230: Informational lists for the SLs and Rule 226(d) reviews for exemptions**

**R231: Cancer risk assessment methodology; ann. AT**

**R232: ITSL methodology; ATs of 1 hr, 8 hrs, 24 hrs, or annual**

# SL List:

- includes ITSLs, IRSLS, and SRSLs
- Some chemicals have primary and secondary ITSLs (with different averaging times)
- Footnotes appear at end of the SL list

CAS No.	Chemical	note	1° ITSL (ug/m3)	ITSL Avg	2° ITSL (ug/m3)	ITSL Avg	IRSL (ug/m3)	SRSL (ug/m3)	IRSL Avg Time
7782-50-5	chlorine	13	0.3	annual	500	8 hr			
10049-04-4	chlorine dioxide		0.2	24 hr					
302-22-7	chlormadinone acetate		0.1	annual					
108-90-7	chlorobenzene		70	24 hr					
74-97-5	chlorobromomethane		10600	8 hr					
57-15-8	chlorobutanol		0.1	annual					
124-48-1	chlorodibromomethane						0.04	0.4	annual
75-45-6	chlorodifluoromethane		50000	24 hr					
668-45-1	chlorofluorobenzonitrile		0.1	annual					
67-66-3	chloroform						0.4	4	annual

# SL list Footnotes

- **Footnote 13: This chemical has two ITSLs with different averaging times. Ambient air impacts cannot exceed either ITSL. Both ITSLs also apply for determinations of permit to install exemptions under R336.1290 (Rule 290).**

# Chemicals Under Review as of 11/1/12

- updated monthly; on AQD air toxics website; sent out monthly to listserve

Date Initiated	Chemical	CAS#	Staff Contact
3/1/2012	Tetrahydrofuran	109-99-9	<a href="#">Mike Depa</a>
3/26/2012	Di(2-ethylhexyl)phthalate	117-81-7	<a href="#">Doreen Lehner</a>
3/26/2012	2,4-Toluene diisocyanate	584-84-9	<a href="#">Mike Depa</a>
3/26/2012	Toluene diisocyanate (mixed isomers)	26471-62-5	<a href="#">Mike Depa</a>
5/24/2012	Phenol	108-95-2	<a href="#">Cathy Simon</a>
5/24/2012	Phosphorus	7723-14-0	<a href="#">Bob Sills</a>
7/3/2012	Methyl chloride	74-87-3	<a href="#">Doreen Lehner</a>
7/10/2012	Propyl bromide	106-94-5	<a href="#">Mike Depa</a>
7/23/2012	Dibenzofuran	132-64-9	<a href="#">Doreen Lehner</a>
7/23/2012	Phenanthrene	85-01-8	<a href="#">Mike Depa</a>
7/31/2012	Styrene	100-42-5	<a href="#">Mike Depa</a>
8/27/2012	Methanol	67-56-1	<a href="#">Cathy Simon</a>
9/21/2012	Chlorobenzene	108-90-7	<a href="#">Cathy Simon</a>

# Benchmarking State Air Toxics Programs

- 30 States, including Michigan, have developed and implemented state air toxics requirements in their air permitting programs.
- State programs evaluate and regulate air toxics emissions and dispersion in their permit reviews, based on public health exposure concerns. These programs are intended to provide some assurance of public health protection by ensuring that air concentrations are kept at safe levels.
- State program details vary widely

**ORR: be consistent with nearby states**

# Permitting Questions

## From the Public

- Is it safe for my children?
- Would you live here?

## From the Companies

- What are the limits we must meet?
- Will you support our project?

**Both groups want certainty and assurance.**

# Is It Safe?

## Common (paraphrased) comments:

- “This community already has a high rate of \_\_\_\_ . The facility would exacerbate the problem.”
- “Our children would be forcibly exposed to the toxic brew spewed from the smokestacks.”
- “The mercury would further contaminate the fish that we eat and harm fetal development for future generations.”
- “Look at the long list of toxic chemicals to be put in the air we breathe. That can’t be safe.”
- “We are all getting asthma and cancer from the air pollution.”

# Some Facility Examples



**House**

**Emission Points**

**Rubber Gasket Manufacturer**

# Rubber Gasket Manufacturing

- Process installed without a permit
- Emission point was 40 ft from house
- No federal requirements
- Small emission source: < 1 ton/yr
- Highly toxic emissions
- Air Quality Division staff provided technical support to company throughout the permitting process

Once permitted, both company and resident will be assured that emissions will be safe

# Rubber Gasket Manufacturing

## 43 Air Toxics Emitted

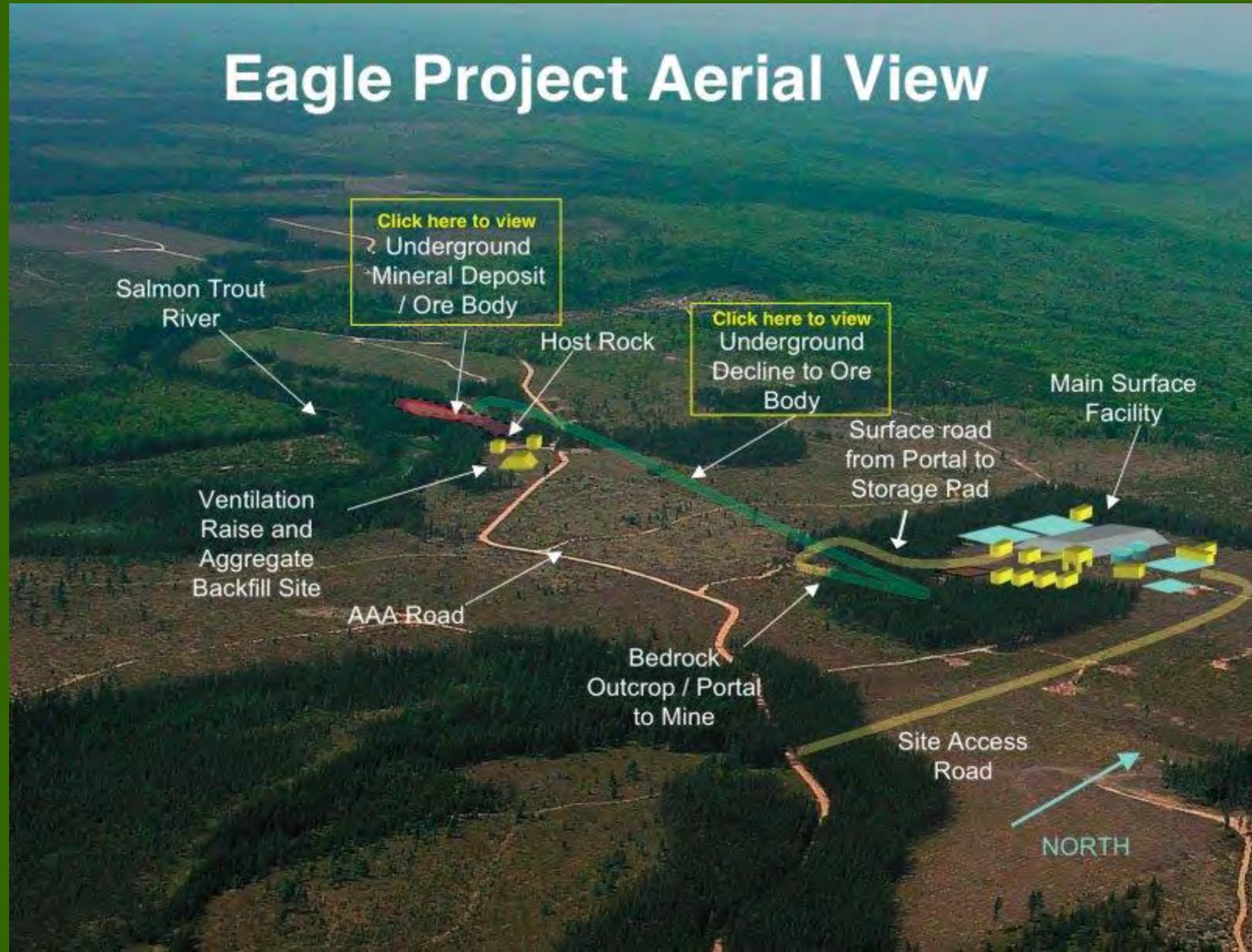
Including these carcinogens:

- *1,3-Butadiene*
- *Benzene*
- *Cumene*
- *Methylene Chloride*
- *Naphthalene*
- *Styrene*
- *1,4 Dichlorobenzene*
- *Propylene Oxide*
- *2- Chloro-1,3-Butadiene*
- *Benzidine*
- *Acetaldehyde*
- *Carbon Tetrachloride*
- *Chloromethane*
- *Epichlorohydrin*
- *Ethylbenzene*
- *Hexachlorobutadiene*
- *Isophorone*
- *Pentachlorophenol*
- *Bis(2-Ethylhexyl)phthalate*

HAPs are shown in yellow *italics*.

# Kennecott Mine

## Eagle Project Aerial View



# **Kennecott Air Permit**

- **No federal air toxics requirements**
- **Small source of air emissions**
- **Highly controversial**
- **Air permit was issued**

## **Administrative Law Judge**

**Based on air rules, including Air Toxics Rules**

- **Found it did not pollute, impair, or destroy, including ambient air and deposition impacts**
- **Affirmed permit approval**