# Benchmarking Survey of State Air Toxics Assessments in New Source Permitting

**Robert Sills, Supervisor, Toxics Unit, Air Quality Division, Michigan Department of Environmental Quality**
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## Background and Introduction

The Michigan Department of Environmental Quality (MDEQ) Air Quality Division (AQD) implements the "air toxics rules" (Rules 224-232) of Part 55 of the Natural Resources and Environmental Protection Act (NREPA) as part of the New Source Review (NSR) permitting program. Because the federal government has not required air toxics risk assessment in NSR, except for the limited and long-delayed requirements of the Clean Air Act under Section 112(f), many states have developed their own requirements to better ensure public health protection. Recently AQD has become aware of interest regarding the scope and basis for the MDEQ air toxics regulatory requirements, and how they compare to other state's programs. In particular, there is interest in comparing the issue of "the list", i.e., the scope of the air toxics included in the state's programs.

Previous "benchmarking" surveys have been conducted, however, they do not provide sufficient detail on this particular issue. For example, previous surveys by MDEQ (2009) and the Louisville (2005) local air pollution control agency are helpful for many purposes, but do not provide sufficient and current program details regarding the key question about "the list" which is the present interest. And, given the broad variety of state air toxics programs, and the many nuances in their scope and applicability, some surveys only provide a simple "yes" or "no" indication of the requirement for air toxics risk assessment.

Proper framing of the survey questions is critical to obtaining the desired information. The present survey sought to find if state air permitting programs go beyond the federal technology-based requirements and address public health concerns for ambient air impacts of air toxics emissions. Care was taken to avoid "false-negative" responses. For example, "false negative" responses could result if a question is phrased, "Is air toxics risk assessment required as part of New Source Review?" In response to that question, a state representative may unfortunately reply "no", if only because, 1) they evaluate modeled ambient air impacts in comparison to some health-based criteria such as TLV/100, but they consider that "screening" rather than "risk assessment"; 2) they have established permissible emission rate limits, which were derived based on assumed facility parameters (e.g., building and stack height and distance to fenceline), dispersion modeling, and health-based ambient air exposure criteria, which they may not think of as being essentially "risk assessment based"; or, 3) they don't perform the assessment as a *requirement* of their rules, but as a matter of policy. With regard to this 3rd point, the present survey found that there are many states which do not have air toxics risk assessment-based requirements in state statutes or rules *per se*, however, they do conduct air toxics impact and risk assessment as a *policy* under broad

"safety net" language in statute or rule. The "safety net" language cited by many states generally requires that air emissions shall not pose a threat to the public health (similar to Michigan's Rule 901 under NREPA Part 55).

Some states have air toxics impact assessment requirements which are fairly unusual or unique. For example, some state programs specifically evaluate (or exclude from evaluation) selected source categories, or, they utilize air toxics monitoring data for targeted geographic areas to drive initiatives to reduce emissions of selected air toxics. The present benchmarking survey attempted to note some of these significant program nuances, while primarily attempting to clarify if the air toxics addressed were limited to a specific list or not. As indicated in the "reference/contact" column of the table below, the results of the previous surveys by MDEQ (2009) and Louisville (2005) were relied upon in many cases, while in many other cases an appropriate state contact person was interviewed. It should also be noted that many state air permitting programs, like Michigan's, have a number of permit exemptions, permits by rule, or allowable emission thresholds, which would circumvent the need to perform modeling of ambient air impacts for air toxics to determine acceptability. Those program nuances have not been compiled in the present exercise, but are a significant and relevant aspect of state program comparisons nevertheless.

**Results**

| State | Reference / contact | For proposed new/modified air emission sources, are ambient air impacts of any air toxics evaluated? If yes, what is the regulatory basis? | What air toxics are included? | What are the ambient air impacts compared to in order to determine acceptability? |
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| Alabama | Wes Thornhill 334-271-7887 | Yes, by policy but not in rules. | All air toxics with TLVs or other OELs. | If the substance has an OEL AND is emitted at > 0.1 lb/hr, then the modeled ambient air impact cannot exceed TLV/40 (8 hr AT) or TLV/420 (annual AT). |
| Alaska | MDEQ (2009); Louisville (2005) | No. | | |

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| Arizona | MDEQ (2009); Louisville (2005) | No. | | |
| Arkansas | MDEQ (2009); Louisville (2005) | No. | | |
| California | Louisville (2005) | Yes, by Hot Spots regulation; sources causing fenceline or community monitored levels of excess risk addressed via control measures (existing; point, area or mobile); modeling done for new sources. | 748 total air toxics; 438 must be quantified in risk assessment (as of 2005 survey) | CA-OEHHA Reference Exposure Levels (RELs), or, one in 1 million cancer risk. |
| Colorado | MDEQ (2009); Louisville (2005) | No. | | |
| Connecticut | Jim Grillo 860-424-4152; Louisville (2005) survey. | Yes. In rules. New and existing sources; major and area sources. | The HAPs list (187). Hazardous Limiting Values (HLVs) were derived for the HAPs based on modified occupational standards. | The rules provide 2 equations (one for under 20 m stacks, one for over 20 m stacks) relating air emissions to ambient impacts, which are compared to HLVs; it is a pass/fail standard for all |

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| | | | | permits. |
| Delaware | Jim Snead 302-323-4542 | Yes, by policy but not in rules. Policy is under a general "safety net" provision (regulation 1102). | All substances; no discrete list. | Maximum ambient air impacts cannot exceed TLV/100 if there is a TLV available; if not, then impact cannot exceed the default value of 100 ug/m3. This is the same approach for carcinogens as well as noncarcinogens. |
| Florida | MDEQ (2009); Louisville (2005) | No. | | |
| Georgia | Eric Cornwell 404-363-7020 | Yes, in guidance only; not by rule; under "safety net" rule provisions. | No discrete list; any substance with IRIS value or OEL. | Hierarchy used; 1) most stringent value between cancer-based value (one in 1 million if "A" carcinogen, otherwise, 1 in 100,000) or RfC; 2) TLV/100 (or, TLV/300 if "A" carcinogen), then scaled by 40 hrs/168 hrs (approx. a factor of 4) to derive acceptable ambient concentration (AAC) with 24 hr AT; for OELs which are ceiling limits or STELs, divide by 10 and also scale by a |

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| | | | | factor of 1.32 to account for 15" AT of OEL (per SCREEN3). |
| Hawaii | MDEQ (2009); Louisville (2005) | Yes; new/modified sources only; major and area sources. | HAPs only. | |
| Idaho | Carl Brown 208-373-0206 | Yes. In rules. New/modified sources only. Does not apply if a MACT rule applies. | Approximately 350 toxic air pollutants; list was developed before the 1990 HAPs list | Utilize conservative pph emission thresholds; if exceeded, then ambient air impacts modeled; acceptable ambient concentrations (AACs) are based on 1E-06 cancer risk, and for noncarcinogens, OEL/UF. |
| Illinois | Jeff Sprague 217-524-4692 | No, unless there are public concerns. Do have an internal screening for ethanol plants. | | |
| Indiana | Brian Wolff 317-234-3499 | No. By policy; air toxics impacts are assessed only if requested by citizen or applicant. No routine | No discrete list; any substance with any state or federal criteria or any health data may be included. | Commission has discretionary basis for permit denial if impacts are deemed adverse. |

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| | | screening. | | |
| Iowa | MDEQ (2009); Louisville (2005) | No. | | |
| Kansas | MDEQ (2009); Louisville (2005) | No. | | |
| Kentucky | Taimur Shaikh 502-564-3999 x4480 | Yes, as a policy regarding new/modified source permitting, under a general "safety net" regulation regarding public health protection. | EPA HAPs plus all substances regulated by EPA under the chemical accident prevention provisions (CAAA Section 112(r)). | Risk assessment based levels associated with HQ=1 or one in 1 million incremental cancer risk. |
| Louisiana | Louisville (2005) | Yes. | HAPs plus other air toxics. | Ambient impacts cannot exceed TLV/factor, or one in 10,000 cancer risk. |
| Maine | Lisa Higgins 207-287-7023; Louisville (2005) survey | Yes. | Have ambient air quality guidelines for HAPs plus additional compounds. | Have calculated health-based guideline values. Have a State statute mercury emission limit of 25 lbs/yr for any new or existing facility. |
| Maryland | Louisville (2005) | Yes. | All HAPs plus others; database of 6329 substances as of 2005 survey. | Maximum ambient air impacts cannot exceed TLV/100 or one in 1 million cancer risk. |

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| Massachusetts | Marc Wolman 617-292-5515 | Yes, as ambient air guidelines. Apply to only: incinerators, WWTPs and residuals mgmt., major remedial actions, and PSD projects. | Discrete list of air toxics (n~120) which pre-dates the EPA 1990 HAPs list | They have derived threshold effects exposure limits (TELs; 24 hr AT) and allowable ambient limits (AALs; annual AT) for all the targeted air toxics. |
| Michigan | Robert Sills 517-284-6763 | Yes. Required by air toxics rules. New / modified sources only. | There is an open-ended definition of Toxic Air Contaminants (TACs); includes all substances other than 41 listed non-TACs. Health-based screening levels have been developed for approx. 1200 TACs. | Screening levels (SLs) for carcinogens are at 1E-06 risk per chemical for the proposed process; or, 1E-05 is acceptable for facility-wide emissions per chemical. Noncancer SLs are derived from RfCs, RfDs, OELs, or other data; default = 0.1 ug/m3. SLs on website. |
| Minnesota | Mary Dymond 651-757-2327 | Yes. By policy, an Air Emissions Risk Analysis (AERA) is needed for proposed new/modified sources exceeding emission thresholds, or | All substances which have a health benchmark value from MN Dept of Health, EPA-IRIS, or California-OEHHA. | Facility-wide emissions, multi-media impacts: risk guidelines are for a cancer risk of 1E-05 and cumulative hazard index of 1 for pollutants with the same toxic endpoint. |

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| | | if "flexible air permit", or if needed per MPCAs discretion; existing sources may also need an AERA if significant public interest. | | |
| Mississippi | Danny Jackson 601-961-5225 | No; risk provisions are only implemented as needed, and are not being triggered by anything at present. | | |
| Missouri | MDEQ (2009) | No. | | |
| Montana | MDEQ (2009); Louisville (2005) | No, except incinerators must demonstrate negligible risk. | | |
| Nebraska | MDEQ (2009); Louisville (2005) | No. | | |
| Nevada | MDEQ (2009); Louisville (2005) | No. | | |
| New Hampshire | Pat North 603-271-0901 | Yes; by rule; new and existing sources of all types. | Utilize a discrete list of ~800 air toxics, including all HAPs plus substances with ACGIH TLVs | OELs are divided by UFs depending on the OEL type. Three cancer classifications are |

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| | | | or IRIS values. | recognized. |
| New Jersey | Olga Boyko 609-633-1108 | Yes; by regulations. | Regulations reference the HAPs list, and also an older pre-HAPs list of air toxics. Risk screening is done for ALL compounds with health benchmarks from EPA, CA, etc. | They utilize permit reporting thresholds which trigger a reporting requirement; utilize HI=1, and one in 1 million cancer risk for a process (one in 100,000 for facility-wide emissions). |
| New Mexico | Ted Schooley 505-476-4334; Louisville (2005) | Yes. New/modified sources only. | HAPs plus substances with OELs. | Use chemical-specific pph emission thresholds; if exceeded, then modeled ambient air impacts cannot exceed OEL/100 or MDL if carcinogenic. |
| New York | Tom Gentile 518-402-8402 | Yes. Required in rules. New and existing sources, excluding fossil fuel combustion sources (which are regulated separately). | Regulated air pollutants (RAPs) defined as criteria pollutants, HAPs, and CAA 112(r) compounds. | Guideline values derived via risk assessment. Currently considering draft rulemaking to restrict RAPs to a shorter list of high priority cpds., due to limited risk assessment staffing. |
| North Carolina | MDEQ (2009); Louisville (2005) | Yes. | HAPs plus a discrete list of other air toxics. | Acceptable ambient pollutant levels established. |
| North Dakota | MDEQ (2009); Louisville (2005) | Yes; new/modified major and area sources. | 700 air toxics, including HAPs, as of 2005 survey. | TLV/100 or one in 1 million cancer risk cannot be exceeded in |

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| | | | | ambient air. |
| Ohio | Paul Koval 614-644-2270 | Yes. Per rules. For new or existing sources with over 1 ton/yr emissions of TAPs. | Toxic Air Pollutants (TAPs) = 303 substances. | TLV/42 for noncarcinogens. |
| Oklahoma | MDEQ (2009); Louisville (2005) | Yes. | 1500 air toxics as of 2005 survey. | TLV divided by a factor which depends on the degree of toxicity. |
| Oregon | Patricia Huback 503-229-6932 | No. Development of a program is under consideration. | Have 3 strategies in place to address air toxics concerns: 1) geographic approach based on NATA to identify areas of concern and develop strategies to reduce risks; 2) statewide source sector strategy approach (e.g., wood stoves); 3) safety net program, to address concerns identified by fenceline monitoring or source modeling. | Their Air Toxics Advisory Committee has established public health protective levels ("ambient benchmark concentrations") for 51 air toxics. Diesel, benzene, manganese, formaldehyde, steel foundry emissions, and wood stoves are among the higher priorities. |
| Pennsylvania | Dean Van Orden 717-787-1455 | No, not routinely or as a broad policy. State statute does have a "safety net" provision, | HAPs plus other air toxics of concern (source-specific). | |

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| | | and under that, permit engineers have discretion to evaluate air toxics impacts and risks. Landfill gases, combustors, and cement kiln emissions have been evaluated. | | |
| Rhode Island | MDEQ (2009); Louisville (2005) | Yes. | HAPs plus a discrete list of other air toxics. | RfCs and other noncancer benchmarks; one in 1 million to one in 100,000 cancer risk. |
| South Carolina | Louisville (2005) | Yes; new/modified and existing. | 257 toxic air pollutants (TAPs), as of 2005 survey. | |
| South Dakota | MDEQ (2009); Louisville (2005) | No. | | |
| Tennessee | MDEQ (2009); Louisville (2005) | No, except in a few cases where public interest is high. | | |
| Texas | Manuel Reina 512-239-1816 | Yes. "Safety-net" rule for the protection of the public; policy under that for the modeling and | All substances are subject; list of substances identified in air emissions with Effect Screening Levels (ESLs) developed has | Target cancer risk = 1E-05 per substance, facility-wide emissions. For noncarcinogens, TLV/100 (1 hr AT) and |

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| | | assessment procedure. New / modified sources only. | grown since 1980's to over 3000 substances. | TLV/1000 (annual AT); default=1 ug/m3. Draft ESLs and justifications public noticed. All appear on website. |
| Utah | | No. | | |
| Vermont | MDEQ (2009); Louisville (2005) | Yes; new/modified and existing sources; major and area sources. | 382 hazardous air pollutants, all HAPs, plus any new air toxic if toxicological information is available. | TLV divided by UF; one in 1 million incremental cancer risk. |
| Virginia | Patricia Buonviri 804-698-4016 | Yes, unless source is covered by a MACT standard; requirement is in regulations. | HAPs list with a couple of exceptions. | TLV divided by UF. No cancer risk-based criteria. Currently considering rule revisions to adopt a more risk-based program. |
| Washington | MDEQ (2009); Louisville (2005) | No. | | |
| West Virginia | MDEQ (2009); Louisville (2005) | Yes. | HAPs plus substances with OELs. | |
| Wisconsin | Jeff Myers 608-266-2879 | Yes. By rule; applies to new and existing sources, except for HAPs covered by a MACT std., or if | | Noncarcinogens: use RfCs or TLV/42 as ambient standards not to be exceeded by aggregate impacts of the source, bkgd. levels, and impacts from other |

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| | | chemical-specific health-based emission thresholds are not exceeded. | | sources.<br>Carcinogens: technology-based control only (LAER), or, can use low-risk modeling demonstration (1E-06 per cpd., or 1E-05 facility-wide) as a compliance option. |
| Wyoming | MDEQ (2009); Louisville (2005) | No. | | |

**Discussion**

Twenty-nine states evaluate and regulate air toxics emissions in their permit reviews, based on public health exposure concerns, although there are many state-specific nuances regarding the regulatory basis, the types of sources included, the air toxics included, the acceptability criteria, and exemptions. Of the six states in EPA Region 5, four states generally and routinely evaluate air toxics ambient air impacts for public health acceptability; only Illinois and Indiana generally do not (but may in exceptional cases). Of the eight Great Lakes states, five states generally and routinely evaluate air toxics ambient air impacts for public health acceptability; only Illinois, Indiana and Pennsylvania generally do not (but they may in exceptional cases).

**Acronyms and abbreviations not defined in text or table:**

1E-05= one in 100,000 incremental cancer risk
1E-06= one in 1 million incremental cancer risk
AT= averaging time
bkgd.= background
CAA= clean air act

cpd.= compound
HAPs= hazardous air pollutants
HI= hazard index
HQ= hazard quotient
LAER= lowest achievable emission rate
MDL= method detection limit
NATA= U.S. EPA's National scale Air Toxics Assessment
OEL= occupational exposure level
pph= pounds per hour
RfC= reference concentration
RfD= reference dose
TLV= threshold limit value
UF= uncertainty factor
ug/m3= micrograms per cubic meter

**References**

Louisville Air Pollution Control. 2005. Summary of State Air Toxics Programs.

Michigan Department of Environmental Quality (MDEQ). 2009. Survey of State Air Permitting Programs. By Doreen Lehner, MDEQ-AQD.