

Sierra Club Great Lakes Program
An Agenda for Public Health and Environmental Protection

**Indiana Should Significantly Strengthen
its Toxic Air Pollution Regulations**

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Sierra Club Great Lakes Program
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Forward

This document is one in a series produced for the Sierra Club Great Lakes Program in order to facilitate and increase public understanding of toxic substance issues and the connection between toxic air pollution, Great Lakes water pollution and effects on human health and the environment.

In this document, we offer a critique of current Indiana policies on the control and evaluation of toxic air contaminants and Sierra Club's recommendations for major improvements in measures to protect public health, environment and the Great Lakes from toxic air pollutants.

Our proposed changes address the need to control persistent, bioaccumulative toxic contaminants from air deposition to the Great Lakes and inland waters, to reduce emissions of all toxic air pollutants by imposing technology-based controls and to provide more specific standards to evaluate and limit hazards to health and environment from toxic air pollutants. The Sierra Club Great Lakes Program seeks adoption of new rules in Indiana to accomplish these objectives.

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1. Introduction and Summary

The Sierra Club Great Lakes Program (SCGLP) has reviewed Indiana's Environmental Statutes and Indiana Department of Environmental Management air and solid waste rules for all provisions that regulate toxic air pollution more stringently than minimum requirements under the Federal Clean Air Act and EPA rules.

In general, Indiana does not have comprehensive regulations to ensure that all toxic air pollution sources are controlled with state-of-the-art technological emission controls. Moreover, Indiana does not have comprehensive requirements to assess and limit the hazards and risks posed by toxic air pollution exposure to public health and the environment. There are only limited attempts at rules that would control toxic air contaminants known to be a cause of deposition of persistent and bioaccumulative pollutants in the Great Lakes.

Although Indiana does have some rules that are more stringent than federal requirements that ultimately affect toxic air pollution, the state's approach is piecemeal and reactive, rather than preventative and pro-active. In most cases, minimum federal emission control requirements are viewed as the most that the state will achieve in controlling toxic air contaminants.

Citizens of Indiana should demand that the Indiana Air Pollution Control Board (IAPCB) and the Indiana Department of Environmental Management (IDEM) adopt comprehensive regulations establishing technology-based emission controls and requirements for assessing and limiting residual risks from toxic air pollutant sources.

2. Major Elements and Criticisms of Indiana's Existing Authority Concerning Toxic Air Pollution

In 1996, then IDEM Acting Assistant Commissioner for the Office of Air Management, Felicia R. George, wrote the following in IDEM's Clean Air Bulletin:¹

“Early on, IDEM determined that adopting federal air toxics requirements, rather than developing individual state rules, make the most sense. The federal program establishes a very comprehensive approach to reducing hazardous air pollutants. Over the last three years, IDEM has focused a significant amount of staff time and resources on laying the foundation for Indiana's Air Toxics Program. U.S. EPA has promulgated more than 20 standards and, to date, IDEM has incorporated 10 of those into state rules; however, IDEM's work in the air toxics area goes well beyond the adoption of federal rules. We are focusing efforts on better understanding hazardous air pollutants, and the sources and processes that emit them.”

¹ IDEM Clean Air Bulletin, Fall/Winter 1996, Vol. 1, Issue 4, Page 2

While toxic air pollution has been a recognized, serious, longstanding problem beginning in the late 1970's and early 1980's with everything from the Bhopal accident to serious and widespread fish contamination problems, Indiana's remedy for these public health and environmental problems from toxic air pollution and Indiana's 1996 policy approach doesn't pass muster.

While federal toxic air pollution controls will accomplish a great deal, they leave many large gaps in public health and environmental protection coverage. The federal program was meant to be a floor for protective efforts rather than a ceiling as Assistant Commissioner George has viewed it. Because of these gaps, it fell to the states to craft toxic air pollution evaluation and control activities that would ensure effective and comprehensive public health protection. Instead, Indiana's failure to act has allowed many of those who emit toxic air pollution to remain largely unregulated if their activities didn't come under the purview of federal hazardous air pollutant rules. This basic Indiana public policy decision to rely primarily on the Federal Clean Air Act has jeopardized the public health and environment of Indiana citizens.

Indiana has enacted some beneficial requirements to control toxic air contaminants that go beyond minimum federal requirements:

- IAPCB has an exemplary rule that is more stringent than federal requirements to ensure that new and modified volatile organic compound emission sources between 25 and 100 tons per year use best available control technology.
- Indiana's toxic emission control performance requirements for large municipal solid waste incinerators go beyond minimum federal requirements for a number of pollutants including highly toxic chlorinated dibenzo-dioxins/furans.
- Despite industry pressure to do so, IAPCB should not revise its current rule to remove asbestos, mercury, vinyl chloride and beryllium from the Indiana Prevention of Significant Deterioration Program and the requirement to use Best Available Control Technology (BACT) for these toxic pollutants.
- The City Council of Hammond, IN has enacted tough, exemplary ordinances to regulate hazardous waste incineration in that locality
- Statewide rules in Indiana limit toxic emissions by appearing to ban residential and commercial open burning of trash

Despite this progress to control toxic air contaminants, many serious deficiencies remain and there is a crucial need to address the following issues:

- There are no Indiana rules that comprehensively address emissions of persistent, bioaccumulative toxic air contaminants that cause public health and environmental damages from air deposition to the Great Lakes.
- IDEM is not enforcing certain general duty and health protection requirements contained in the Indiana Environmental Statutes because no rules have been issued to specifically direct the agency on such administration and decisionmaking.
- Because IAPCB has failed to write rules going beyond minimum federal requirements on emissions of toxic pollutants and odors, IDEM cannot guarantee that its air pollution regulatory program ensures environmental justice for communities and neighborhoods heavily exposed to toxic air emissions.
- Recent amendments by IAPCB and IDEM to rules concerning public records and permissible confidentiality designations by industry have weakened previous clear and unambiguous prohibitions against allowing data on emissions and effluents to be declared confidential and unavailable to the public.

S IDEM/IAPB's emission thresholds, beyond which industries must seek an Indiana air discharge permit, are too high. As written, the thresholds allow many significant sources of toxic air pollutants to escape technical evaluation, permitting and public notice/participation requirements for new and modified sources. Failure to evaluate and permit small sources of toxic air contaminants can put communities, public health and environment at risk.

- IDEM's Office of Air Management has no rules to evaluate, quantify and limit environmental risk from emissions of carcinogens from new and existing sources.

- IDEM's current policy on reviewing community ambient impacts of hazardous air pollutants from new and modified emission sources:

S is not legally enforceable and binding on permit applicants

S allows any unlimited community impact for all toxic pollutants that are not regulated by the Occupational Safety and Health Administration or that are not on a list of 189 hazardous air pollutants in the Federal Clean Air Act

S examines the modeled ambient impact only from an incremental increase in hazardous air pollutant emissions from an expansion at an existing emission source, rather than requiring review on the ambient impact of the total prospective emission contemplated in a proposed permit accomodating such an expansion

- S** allows potentially excessive, inappropriate risks to the public from carcinogenic toxic pollutants by inappropriate reliance on occupational guidelines for worker exposure to set ambient limits for public exposure
 - S** does not adequately deal with toxic pollutants whose properties are so acutely hazardous that their analogous occupational limits include short term ceiling values
- IAPCB’s rules on good engineering practice stack heights do not address emissions of volatile organic compounds.
 - Exemptions in IAPCB’s rules allow some volatile toxic emission sources to switch off emission controls during certain times of the year or to switch to the use of unregulated and uncontrolled solvents that are toxic pollutants

The reader is referred to the Sierra Club document, “A Narrative Report on Indiana’s Air Pollution Rules Affecting Toxic Air Pollutants,” for further analysis of Indiana toxic air pollution rules going beyond minimum federal requirements.

1. The Sierra Club Great Lakes Program Recommendations for Public Health and Environmental Protection — Changes Needed to Significantly Increase the Stringency of Indiana’s Rules to Control Toxic Air Pollution

1.1 State Policy on Emissions of Airborne Toxicants Should Emphasize the Precautionary Principle, Virtual Elimination of Persistent Bioaccumulative Toxicants, Toxics Use Reduction, Pollution Prevention Practices and Chemical Testing Programs

The Sierra Club embraces the precautionary principle in setting policy to control toxic air pollution. We should not wait for definitive scientific proof of environmental and public health damages before implementing prudent preventive measures to limit emissions and to evaluate and limit subsequent public health and environmental impacts from toxic air pollution.

The Sierra Club strongly opposes the use of quantitative risk assessment as a justification to allow uncontrolled, poorly controlled or poorly characterized emissions of toxic air pollutants to the environment. Quantitative risk assessment used in this manner will inevitably lead to excessive human and environmental exposures, failure to account for exposure to multiple and synergistic environmental contaminants and unreliable characterization of potential real-world health and environmental threats. Moreover,

existing risk assessment procedures often fail to consider all pathways of exposure and potential future hazards from bioaccumulation of persistent toxic contaminants.

In the case of persistent bioaccumulative toxic contaminants, the Sierra Club supports virtual elimination of emissions and zero discharge as the goal for point and area sources. For chemicals that exhibit persistence, bioaccumulation, or both, virtual elimination and zero discharge should be the required policy in the Great Lakes states and provinces to achieve Great Lakes restoration.

For all other toxic air pollutants, the Sierra Club strongly embraces toxics use reduction and pollution prevention to dramatically reduce public health threats and environmental impacts. Zero discharge through changes in industrial processes and the elimination of toxic materials should still be the goal in dealing with toxic air pollution.

In all cases, industries seeking to emit toxic air contaminants should be under a “reverse onus” to prove that such emissions do not pose a threat to our Great Lakes environment and public health *prior to* their widespread use and/or release. This burden of proof should never rest on the public.

The Sierra Club recommends that environmental agencies require industries wishing to use and/or emit toxic chemicals to submit detailed toxicological data on such chemicals. State and federal environmental regulators should insist on detailed toxicological testing of high production-volume chemicals to determine the potential of these materials to cause cancer, neurological damage, endocrine disruption and/or other harmful effects. Such testing must take place before emissions are permitted.

1.2 Indiana Should Adopt Comprehensive Technology-Based Emission Control Requirements for New, Modified and Existing Sources

Indiana’s present air pollution rules do not contain a comprehensive requirement that all toxic air contaminant sources must utilize state-of-the-art technology-based engineered emission controls for all new, modified and existing emission sources.

Indiana’s failure to ensure state-of-the-art emission controls on toxic air contaminants fails to protect the public trust in air resources and fails to protect public health, communities and the environment.

With comprehensive technology-based emission control requirements, sources must install emission control equipment or make changes to processes and process equipment to reduce emissions. Any residual threats to public health and environmental protection can then be evaluated and controlled with more stringent technological controls.

The SCGLP recommends the following technology-based emissions control technology requirements:

Pollutant or Source Category	Emission Control Requirement
<p>Persistent bioaccumulative toxics from either new, modified or existing sources</p>	<p>Lowest Achievable Emission Rate (LAER) technically achievable, consistent with “virtual elimination” goals of the Binational Toxics Strategy</p>
<p>Known or suspected human carcinogens as indicated by credible evidence; chemical compounds having serious chronic endocrine disruption, teratogenic and/or neurological effects in human systems</p>	<p>Lowest Achievable Emission Rate (LAER) technically achievable</p>
<p>New, modified or existing municipal solid waste or medical waste incinerators</p>	<p>Lowest Achievable Emission Rate (LAER) technically achievable, consistent with “virtual elimination” goals of the Binational Toxics Strategy</p>
<p>New or modified sources of all airborne toxicants other than those indicated above</p>	<p>Best Available Control Technology (BACT) determined by a top-down methodology similar to BACT for Prevention of Significant Deterioration Sources</p>
<p>New, modified and/or existing sources of airborne toxicants which are serious pulmonary irritants and/or sensitizers with serious acute and chronic effects on respiratory function (i.e. hydrogen sulfide, sulfuric or nitric acid aerosol, isocyanates, chlorine and chlorine dioxide, hydrogen flouride, etc.)</p>	<p>Best Available Control Technology (BACT) determined by a top-down methodology similar to BACT for Prevention of Significant Deterioration Sources</p>
<p>Existing sources of airborne toxicants other than those noted above which are listed by rule and which are not otherwise subject to requirements for new/modified sources</p>	<p>Reasonably Available Control Technology similar to a level of stringency associated with CAA Maximum Achievable Control Technology requirements for existing sources</p>

1.3 Indiana Should Amend its Regulations to Establish a Regulatory Process for Hazard and Risk Assessment and Limitations on Residual Hazards and Risks

For new and modified sources of toxic air pollution, Indiana should regulate the full spectrum of toxic air contaminants emitted after the application of technology-based controls as recommended in the prior section.

According to the National Institute for Environmental Health Sciences:

“There are 50,000 chemicals in commercial production. It is estimated that about 10,000 are in significant commercial production and perhaps 2,000 present significant exposure levels. We do not know what fraction of those have been adequately tested, but certainly it is not much more than 10 to 30 percent.”²

New and modified sources will pose the greatest long term potential for public and environmental exposure because they will be in existence and emitting for the longest period of time. New and modified sources also offer the most significant opportunities to impose modern toxic air contaminant controls.

1.4 A New Process-Based Indiana Risk Assessment Regulation Should Always Rely on Using the Best, Most Up-to-Date Toxicology Information Available

Under a process based rule for pathway analysis, exposure determination, risk assessment and risk limitation, explicit procedures would precisely define how such assessments should be conducted and what data should be used. Such a process-based rule would require the use of the best possible toxicology data available for risk and hazard assessment purposes. If no toxicology data is available, then a stringent ambient limitation of 0.1 micrograms/cubic meter on an annual average should be imposed. The entire structure of the process should always encourage the development of the best, most representative toxicology data available, rather than merely relying on static “table based” ambient health criteria.

For environmental carcinogens, Indiana should enact rules to require risk assessment and enforceable limitations of quantitative risk to be less than one in a million cancer risk incidence. The linearized multi-stage model of carcinogenicity should be used for a conservative prediction of one in a million risk levels for airborne concentrations assuming a 70 year lifetime exposure. The assumption of this model is that there is no threshold for increases in risk from exposure to proven or suspected

² See <http://www.niehs.nih.gov/oc/factsheets/ead/text.htm>

human cancer-causing materials; and that elevations in cancer risk can be caused by chemical agents that either initiate or promote carcinogenic processes.

Risk assessment for environmental carcinogens should rely on all available credible and up-to-date scientific evidence of carcinogenicity and dose response relationships, rather than a static list-based process relying on data that can be ten or more years old.

Individual permitted emissions for new and modified sources of environmental carcinogens should not cause lifetime cancer risks from inhalation exposure at the company property line to exceed one in a million.

For non-carcinogens, the procedure would specify the appropriate species difference, route difference and dose conversions and other uncertainty factors to be used.

Modeled air concentrations of toxic air pollutants should not exceed screening levels predicted by the applicable rule-described process based on the use of the best toxicology information available.

Here is the hierarchy of available toxicology data on non-carcinogens in order of increasing quality for community air pollution risk evaluation procedures as one goes down the table:

Toxicology Data for Risk Assessment for Non-Carcinogens
No data available; use 0.1 ug/M3 for annual average screening level
Only LD-50 available
An LC-50 is available
An oral route, 7 day No Observable Effects Level is available
An inhalation route, 7 day No Observable Effects Level is available
An ACGIH TLV is available; use 1% of the TLV as screening level
A NIOSH recommended occupational health exposure guideline is available; use 1% of the guideline as the screening level
An EPA Reference Dose is available
An EPA Reference Concentration is available

For each of the above types of toxicology data, appropriate and conservative dose route conversion factors, species difference factors and other uncertainty factors should be used to ensure public health protection.

For toxic air pollutants with acute toxicity, dose conversion factors and other uncertainty factors should use respiration rates, body sizes and whole body dose calculations appropriate to protect children who spend a great deal of their time outdoors.

For pulmonary irritants and sensitizers, such as toluene di-isocyanate and chlorine dioxide, short term averaging times as brief as ten minutes should be considered for maximum health protection and such standards should protect sensitive groups in the population.

1.5 Indiana Should Impose Comprehensive Multi-Pathway Exposure Assessment and Risk Characterization Procedures and Residual Risk-Based Emission Standards for Emissions of Persistent Bioaccumulative Toxic Air Pollutants from New, Modified and Existing Sources

All new, modified and existing sources should be required to perform residual risk assessments after applying technology-based emission control requirements for persistent bioaccumulative toxicants, known or suspected carcinogens and other toxic pollutants.

Indiana should ensure any lists of regulated toxic air contaminants it uses in the future be properly coordinated with designated Tier 1 and 2 pollutants under the U.S./Canada Binational Toxics Strategy. Additional chemical compounds that display persistent bioaccumulative behaviors should also be added in future Indiana toxic air pollution rule amendments.

Risk assessment for persistent bioaccumulative toxicants should incorporate multi-pathway exposure assessment and should identify sensitive demographic population subgroups (i.e. subsistence fishers, local consumers and farmers who may be more at risk from exposure on farmland adjacent to airborne toxicant sources, etc.).

An individual source, together with other multiple sources and background, should not be permitted to cause excess cancer risks calculated for all pathways to exceed one in 100,000.

1.6 For Classes of Particular Compounds Posing Unique Risks, Indiana Should Require Ecological Risk Assessment

Certain materials, such as tri-butyl tin, pose unique ecological risks that will not be reflected in multi-pathway human health risk assessments. Indiana should develop a rule-based process to identify these materials and to require ecological risk assessment during permitting. In cases where ecological risk assessment is warranted because of an individual toxic air pollutant, permitting of emission sources should not allow exclusive use of natural resources that would allow local or regional biodiversity to be damaged.

1.7 Indiana's Toxic Air Pollution Regulations Should be Coordinated with Emerging Regulation for Non-Point Source Atmospheric Inputs to Impaired Water Bodies Under the Federal Clean Water Act's Total Maximum Daily Load Program

Non-point source atmospheric pollution of the Great Lakes and inland lakes of this region has emerged as a serious public health and environmental problem. Under the Clean Water Act's program to develop Total Maximum Daily Load budgets for water bodies impaired by airborne deposition of chemical contaminants, measures must be taken to roll back emissions from existing sources and to prevent new sources from making problems worse.

Indiana's toxic air pollution regulations should be amended to authorize TMDL-based toxicant contamination budget limitations during permitting of new, modified and existing toxic air contaminant sources.

1.8 Indiana Should Enact New Requirements to Control Emissions from Waste Combustion

Indiana should ensure that all municipal, commercial and industrial waste incinerators comply with new, stringent state regulations that exceed the minimum federal requirements and ensure that all toxic air pollutants are controlled with state-of-the-art emission control technology. In addition, Indiana should enact additional measures to require removal of mercury and other heavy metal-containing materials from the solid waste stream before such wastes can be received by a municipal, commercial and industrial waste incinerators.

1.9 Indiana Should Stringently Regulate All Poly-Chlorinated Dibenzo-Dioxins/Furans Emissions

Indiana should regulate all poly-chlorinated dibenzo dioxins/furans emissions through a system of toxic equivalency factors to recognize the varying toxicity of each different form of these compounds. These toxic equivalency factors should be used when evaluating and limiting residual risks at all such emission sources.

Indiana should impose technology-based emission controls reflecting lowest achievable emission rate (LAER) stringency on all new, modified and existing dioxin/furan emission sources.

1.10 Indiana Should Promulgate Rules to Restrict and/or Ban Certain Commercial, Societal and Manufacturing Uses of Mercury

Indiana should promulgate new rules to restrict and/or ban the sale, use, and disposal of certain mercury-containing items and work practices involving mercury. Although Indiana’s efforts to control the mercury content of consumer batteries are a good start, the state should do more to limit mercury in consumer commerce.

New mercury restrictions should seek to reduce or eliminate mercury pollution in the environment or to achieve mercury use reductions where feasible and prudent alternatives exist. The restrictions would also reduce mercury use for frivolous items or when such patterns are otherwise expected to cause needless mercury releases to the environment. The potential for serious indoor mercury contamination problems will also be reduced by some of the measures in the table below:

Proposed Restrictions, Bans and Work Practices Concerning Mercury Products
Ban on sale of mercury-containing games, apparel, decorations and novelties
Requirement for recyclers to remove mercury switches for mercury recovery from vehicle processing and white goods
Requirement for health care facilities to collect mercury-containing medical batteries and recycle for mercury recovery
Requirement for building demolition companies to collect mercury containing thermostats and electrical switches for mercury recovery and/or proper disposal
Ban the sale and use of mercury fever thermometers
Restrict use of mercury meteorological instruments by government, industry and scientific users
Ban on the sale of household mercury thermostats and electrical switches
Requirement for mortuaries to recover dental amalgams before cremation
Prohibit bulk mercury sale to general public and restrict sale only to government, scientific, educational and industrial users; mercury sales for ritualistic uses to be banned
Restrict sale of batteries to minimal mercury content achievable with current battery manufacturing techniques
Require proper disposal techniques for mercury-containing flourescent lights for large commercial, government, educational, industrial and institutional users

Require fugitive control measures for preparation of dental amalgams, collection measures for water recovered from dental drilling for amalgam removal and restrictions on disposal of removed amalgams

Prohibition on incineration of phenol mercuric acetate wastes in cement kilns

Restrictions and performance standards on mercury recovery operations to limit fugitive emissions and environmental impacts

Provide money and staff for the mercury “Clean Sweep” programs