

IMPROVING THE SCIENCE IN THE DRAFT REPORT:

Selected Information on Chemical Releases within Great Lakes Counties Containing Areas of Concern (AOC)

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Since its formation more than 20 years ago, the Agency for Toxic Substances and Disease Registry (ATSDR) has been committed to the protection of public health from chemical contamination. In 2001, the International Joint Commission (IJC) asked ATSDR for “assistance in evaluating the public health implications of environmental contamination in Great Lakes Areas of Concern.”¹ In response to that request, ATSDR developed a report entitled “*Selected Information on Chemical Releases within Great Lakes Counties Containing Areas of Concern (AOC)*”²”

An in-process draft of this report became public in 2007, before ATSDR had finished reviewing and finalizing it. That draft raised scientific concerns. These concerns are described at http://www.atsdr.cdc.gov/grtlakes/pdfs/Scientific_Concerns.pdf. Accordingly, ATSDR delayed release of the report and set about correcting the deficiencies. This statement summarizes actions taken to assure the scientific quality of the current (April 2008) draft.

Whether people in the Great Lakes region are exposed to environmental contaminants in ways that could affect their health is an important question. The answer depends on a solid science base with accurate environmental data, knowledge of whether and how people are exposed to environmental contaminants, accurate health outcome data, appropriate data analysis, and conclusions supported by the data. The exposure data and the health data must correspond in

¹ The USEPA defines an Great Lakes Area of Concern as “a severely degraded geographic area within the Great Lakes region.” See <http://www.great-lakes.net/envt/pollution/aoc.html#overview>.

² Previous drafts were titled *Public Health Implications of the Great Lakes Areas of Concern (AOC)*

geographic location and in time. For readers to assess the science accurately, the process of collecting, analyzing, and interpreting information must be clear and transparent.

From the perspective of ATSDR senior scientists, the July 2007 draft report suffered from serious deficiencies in many of those areas. An inter-divisional ATSDR workgroup, with help from the National Center for Environmental Health/ATSDR Office of the Director (OD), have worked to remedy the deficiencies. Below is a short summary of the major concerns and how they were addressed in the current (April 2008) draft:

Scientific methods: The methodology for the July 2007 and previous working drafts was unclear. Readers of the drafts could not identify key processes the authors used to analyze the data and draw conclusions, particularly relating to the use of county health data.

In the April 2008 draft, this problem was addressed as follows:

- Chapter 1 more clearly presents the methods by which the report was developed and compiled.
- Chapter 7 presents conclusions that are more directly linked to the data presented.
- Both Chapters 1 and 7 present more and better information on the strengths and limitations of the compilation.
- References have been checked, updated, and corrected and new references have been added.

Environmental data: Multiple improvements were made in the environmental data presented in the April 2008 report relative to earlier drafts.

- *More ATSDR public health assessment products were included.* Expanded ATSDR public health assessment products were updated through 2007. In addition, every product was carefully checked against the report's inclusion criteria. As a result, 34 additional sites were included in the report and 3 sites removed. A complete inventory of included and excluded ATSDR site assessment products is included in Appendix 2.
- *Because their quality could not be assured, some environmental data were excluded.*
 - By the time of the development of the 2008 draft of this report, some data in the HAZDAT dataset could not be verified. As a result, HAZDAT data are not included in the 2008 draft. Interested readers can access the HAZDAT database at <http://www.atsdr.cdc.gov/hazdat.html>.
- *Some environmental data have been excluded as not relevant.*
 - "Beach Closings," which are driven by bacteria counts rather than chemical releases, were excluded as not within the scope of the report's focus on chemical releases.
- *The accuracy of the AOC maps was improved.* For example, maps in the 2008 draft report now include the location of those hazardous waste sites reviewed by ATSDR and described in the document as well as those Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) sites found in the area previously mapped. The maps were also expanded to include the area from which environmental data are described (AOC counties) rather than just the AOC itself.

Exposure information: The information summarized in the 2007 draft and other previous working drafts of this report did not indicate whether, when, and how people might have been

exposed to environmental contaminants. In Chapter 7, the April 2008 draft report acknowledges these gaps and recommends additional scientific work to address them.

Health data: The 2007 draft based its conclusions in part on preexisting health data collected for other purposes. Specifically, included in the 2007 draft were county-level data compiled by the Association of State and Territorial Health Officials, the National Association of County and City Health Officials, and the Public Health Foundation, with support from the Health Resources and Services Administration (HRSA) <http://www.phf.org/CHSI-notes.pdf>. Although those health data are useful for many purposes, several considerations mitigated against their inclusion in the April 2008 draft report:

- The spatial scale of the data—that is, counties—did not correspond to the Areas of Concern. (Please refer to the maps included in the 2008 draft document for illustrations of the sometimes limited overlap between Areas of Concern and counties.)
- Many or most indicators in the Community Health Status Reports were not associated with exposure to hazardous chemicals.
- The data in the Community Health Status Reports were collected well before the more recent environmental data referenced in all of the draft reports. Any examination of the health impacts of environmental exposures should rely on health data collected at the same time as, or after the time of, the exposures.
- The statistical analyses of the health data in the 2007 draft report were also problematic. Specifically, health measures for Great Lakes counties were classified as “elevated” if the measures were greater than the national median and that of a set of “peer counties,” that is, counties whose population composition and demographics were relatively similar to

those of the subject county. Using these methods, approximately half of all health indicators for any county in the nation would have been classified as elevated, whether or not any environmental exposure occurred. This method of analysis likely implied health problems caused by environmental exposures when no such problems were present. The method also likely missed important environmental effects when the population of the county was large relative to the numbers of exposed persons.

In response to the above concerns, the health data have been removed from the April 2008 report—again, they are available on the Web at the address noted above. Chapters 1 and 7 provide a general discussion of the reasons why available environmental data are not generally linked to health data in this report.

Scientific review: Several rounds of peer and expert review of 2007 and 2004 working drafts of the report were conducted. Yet, many important reviewer comments were not adequately addressed, especially related to concerns about including the health data. For this report, responses to all peer review and stakeholder review comments were considered. Changes to the 2008 report summarized in this statement represent steps forward in addressing peer and expert reviewer comments.

Conclusions: Some conclusions of the 2007 and other previous working drafts overreached available data. For example, the 2007 report contained statements such as “[the study] would tend to underestimate patterns of contamination as well as potential health effects to vulnerable populations,” that concluded or implied health effects from environmental contamination even while other statements in the drafts admitted an inability to estimate health effects. Chapter 7 of the 2008 draft better matched conclusions with the available data.

Recommendations: The 2007 and other previous working drafts of this report generally lacked recommendations for public health science and practice. The 2008 report uses its updated knowledge of environmental contamination in the Great Lakes region to make additional recommendations.

Summary: Understanding environmental conditions in the Great Lakes region and protecting residents from possible health effects is a priority for CDC and ATSDR. Community members in the Great Lakes region deserve accurate information provided in a timely manner. The decision to take additional time to improve the draft report in order to ensure its scientific quality was necessary.

For more than 20 years, CDC and ATSDR consistently have provided the people living in the Great Lakes states with up-to-date information to help protect them from exposures to toxic chemicals. In the eight Great Lakes states—between January 2001 and February 2008—ATSDR has developed and supported 756 documents pertaining to 528 sites and both ATSDR and NCEH have many ongoing scientific and programmatic activities. CDC and ATSDR are committed to providing useful and scientifically sound information that will help decision-makers protect the public health and the environment.