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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)
)
WATER QUALITY STANDARDS AND)
EFFLUENT LIMITATIONS FOR THE) R08-9
CHICAGO AREA WATERWAY SYSTEM) (Rulemaking – Water)
AND THE LOWER DES PLAINES RIVER:)
PROPOSED AMENDMENTS TO 35 Ill.)
Adm. Code Parts 301, 302, 303 and 304.)

NOTICE OF FILING

To: see attached Service List

PLEASE TAKE NOTICE that on the 25th Day of June, 2008, I filed with the Office of the Clerk of the Illinois Pollution Control Board the attached Response of Environmental Law and Policy Center, Friends of the Chicago River, Sierra Club (Illinois Chapter), Natural Resources Defense Council and Openlands to the Metropolitan Water Reclamation District of Greater Chicago's Motion To Stay, a copy of which is hereby served upon you.

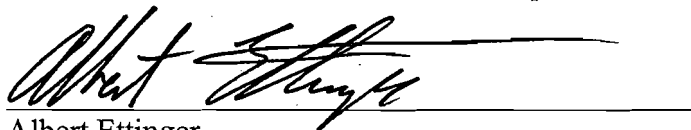
By: 
Albert Ettinger

Dated: June 25, 2008

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CERTIFICATE OF SERVICE

I, Albert Ettinger, the undersigned attorney, hereby certify that I have served the attached Response to the Metropolitan Water Reclamation District of Greater Chicago's Motion To Stay, on all parties of record (Service List attached), by depositing said documents in the United States Mail, postage prepaid, from 35 East Wacker Drive, Suite 1300, Chicago, Illinois before the hour of 5:00 p.m., on this 25th Day of June, 2008.

A handwritten signature in black ink, appearing to read "Albert Ettinger", is written over a horizontal line. The signature is cursive and somewhat stylized.

Albert Ettinger

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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)
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WATER QUALITY STANDARDS AND)
EFFLUENT LIMITATIONS FOR THE) R08-9
CHICAGO AREA WATERWAY SYSTEM) (Rulemaking – Water)
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PROPOSED AMENDMENTS TO 35 Ill.)
Adm. Code Parts 301, 302, 303 and 304)

**ENVIRONMENTAL ADVOCATES' JOINT RESPONSE TO THE
METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER
CHICAGO'S MOTION TO STAY IPCB R08-9**

“Every year in which disinfection does not occur puts users of the [Chicago Area Waterway System] at risk of infection and discourages additional members of the public from making full use of the waterway out of fear for their health and safety.” *See* attached Affidavit of Peter Orris, Professor and Chief of Occupational and Environmental Medicine, University of Illinois at Chicago Medical Center. (Exhibit A, p. 25). Notwithstanding this danger, the Metropolitan Water Reclamation District of Greater Chicago (“MWRDGC”) has moved to stay the triennial review process of considering whether disinfection is needed in the Chicago Area Waterway System (“CAWS”) for three years or more, in part on the grounds that the University of Illinois at Chicago (“UIC”) School of Public Health is conducting ongoing research on the CAWS. This delay is unwise and unnecessary for the reasons pointed out by the School’s Dr. Orris. The motion to stay would also sidetrack for three years the effort to upgrade protections for aquatic life in the CAWS, which is the culmination of a stakeholder process that began nearly six years ago, and which should have been commenced by law decades ago.

The Environmental Law and Policy Center, Friends of the Chicago River, Natural Resources Defense Counsel, Openlands, Prairie Rivers Network and Sierra Club

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(collectively “Environmental Advocates”) oppose MWRDGC’s motion for a stay because the need to upgrade the standards for protecting recreation and aquatic life in the CAWS is urgent and fully supported by the evidence. MWRDGC’s portrayal of IEPA as racing to file an ill-considered petition with the Board before MWRDGC had an opportunity to conduct a large number of critical studies could hardly be further from the truth. The stakeholder process that IEPA conducted prior to proposing this rule was lengthy, thorough and inclusive. In any event, MWRDGC’s motion is based on a misconception of the applicable law.

MWRDGC has failed in its motion to present evidence that the designations proposed by IEPA are not attainable, which is the issue at the heart of this proceeding. The Environmental Advocates intend to present evidence that further supports the IEPA’s conclusion that the proposed standards are attainable, as well as evidence that parts of the proposal need to be strengthened to better protect the environment.

I. The IEPA proposal to re-designate portions of the CAWS to protect recreation and aquatic life is adequately supported by the record.

A. The Stakeholder Process

The proposed rules were anything but rushed. One might accurately say that the IEPA’s use attainability analysis of the CAWS was decades late. The U.S. EPA regulations require states every three years to re-examine designations of uses for water bodies that do not include all the fishable/ swimmable uses to determine if new information has become available. 40 C.F.R. § 131.20(a). However, IEPA has not formally reviewed the secondary contact/indigenous aquatic life designations for most of the CAWS since 1972.

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IEPA officially began a use attainability analysis (“UAA”) to consider whether new information had become available regarding the attainable uses of the CAWS with a “kick-off meeting of stakeholders in September 2002.” Letter of Richard Lanyon, MWRDGC Director of Research and Development to John C. Farnan, MWRDGC General Superintendent, June 4, 2004, available on MWRDGC website. (Exhibit B). Thereafter, the IEPA conducted numerous studies, public meetings and meetings of the Stakeholders Advisory Committee between 2002 and 2006. *See* “Timeline of Lower Des Plaines River and CAWS UAA Stakeholder Advisory Committee Meetings,” IEPA Attachment E; Meeting Minutes from the Lower Des Plaines River Workgroup and the CAWS Stakeholder Group, IEPA Exhibit 36.

MWRDGC cooperated in the studies and other portions of the UAA process as it was required to do by the National Pollutant Discharge Elimination System (NPDES) permits issued for its Calumet, North Side and Stickney plants. (Exhibit B, p. 2). Nothing kept MWRDGC from beginning additional studies in 2002 or earlier if it thought them necessary.

In January 2007, IEPA circulated a draft set of rules that was reviewed by U.S. EPA Region 5. The U.S. EPA response made clear that, if anything, it believed the IEPA erred by failing to give sufficient protection to potential uses. Letter of Linda Holst, Chief Water Quality Branch, Region 5 to Toby Frevert, Manager, Division of Water Pollution Control (Jan. 18, 2007). (Exhibit C, p. 2).

Subsequently, there were additional meetings held on the draft rules before the final proposal was made to the Board on October 26, 2007. *See* “Timeline of Lower Des

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Plaines River and CAWS UAA Stakeholder Advisory Committee Meetings,” IEPA
Attachment E.

B. The burden is on those who would stop all or part of the CAWS from being given general use protections to show that uses are not attainable.

In its motion, MWRDGC presents a five page list of alleged “substantial deficiencies in the IEPA proposal” in the order in which the supposed deficiencies were revealed during the hearing. (MWRDGC Motion, p. 9). In most cases, one can only speculate regarding the basis or logic of MWRDGC’s claims because the “deficiencies” are presented without any explanation as to how they bear on the proposed designations or criteria. However, an unstated, and entirely incorrect assumption behind the presentation of this laundry list is that IEPA has the legal burden in this proceeding to prove that the waters in question can support fishable/swimmable uses, and that it can only meet this burden by amassing scientific information regarding every fact that might be thought relevant to deciding what aquatic life and recreational uses the CAWS can support and the standards necessary to protect them.

In fact, the law is clear that there is a rebuttable presumption that every water body should support fishable and swimmable uses. *Kansas Natural Resource Council v. Whitman*, 255 F. Supp. 2d 1208, 1209 (D. Kan. 2003); *Idaho Mining Ass’n v. Browner*, 90 F. Supp. 2d 1078, 1097-98 (D. Idaho 2000); see U.S. EPA, Water Quality Standards Academy, “Rebuttable Presumption” Key Concept (available at <http://www.epa.gov/waterscience/standards/academy/keyconcepts/mod2/page4.htm>). In other words, it is assumed that fishing, swimming, and other recreational activities could take place in any water body---and the water body should be designated for those uses---unless the state shows (using one of the six specific factors described below) that those

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uses could not take place in a particular water body. *Id.* Water quality criteria must then be established that protect those uses. 40 C.F.R. §131.11. If a state seeks to designate a water body in a manner that it will not be protected for the full range of recreational (e.g. swimming, fishing boating) and aquatic life uses that are presumed to be attainable, the UAA must demonstrate that those uses are not attainable and determine the highest achievable uses. 40 C.F.R. §131.10(j)(1).

Specifically, the UAA regulations only provide six ways that a state, MWRDGC or any other party can rebut the presumption of fishable / swimmable use. *See* 40 C.F.R. §131.10(g). Five of these six reasons have to do with physical limitations of the waterbody. Only one of the six regulatory factors listed in 40 C.F.R. §131.10(g) allows for consideration of economic factors, and then only under the most extreme circumstances. *See* 40 C.F.R. §131.10(g)(6). Yet, without having put on any evidence regarding cost, MWRDGC alludes to the possibility that the proposed standards should not apply to them because of economic hardship.

Under Section 131.10(g)(6), a use does not have to be designated for protection if the necessary additional pollution controls “would result in substantial and widespread economic and social impact.” It is well established that this is a test of affordability, not a cost-benefit analysis. *See* U.S. EPA, *Interim Economic Guidance for Water Quality Standards - Workbook* (available at:

<http://www.epa.gov/waterscience/standards/econworkbook/>). The U.S. EPA Guidance makes clear that “[d]emonstration of substantial financial impacts is not sufficient reason to modify a use or grant a variance from water quality standards. Rather, the applicant

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must also demonstrate that compliance would create widespread socioeconomic impacts on the affected community.” *Id.*

Similarly, there is nothing in Illinois law or practice that suggests that water quality designations cannot be upgraded in the CAWS until IEPA negates every imaginable objection. “General use,” a classification that broadly protects recreation and aquatic life, is plainly the normal designation in Illinois as shown by the fact that the Board has designated the vast majority of Illinois water bodies as such. Regarding the technical feasibility and economic reasonableness of a proposed standard, the Board is only required to “consider” these factors. *See* 415 ILCS 5/27(a) (2008). The “Board’s broad rulemaking authority is not limited by the extent of hardship that a regulation may cause to dischargers. The Board need not conclude that compliance with a proposed regulation is ‘technically feasible and economically reasonable’ before it can adopt such a regulation.” *Granite City Division of National Steel Company v. IEPA*, 155 Ill. 2d 149, 182-83, 613 N.E. 2d 719, 734 (Ill. 1993) (“*Granite City Steel*”).

In any event, because state water programs must be no less stringent than the federal program (40 C.F.R. §§ 131.5; 131.6), the question of whether the measures necessary to protect the identified uses are technically feasible and economically reasonable must be interpreted consistently with the Section 131.10(g) factors, such that the measures may be found infeasible only as defined in factors one through five, or economically unreasonable as defined in factor six. *See* 40 C.F.R. §131.10(g).

Moreover, in this instance, it would be preposterous to argue that disinfection is infeasible or economically unreasonable. It is required by the Board almost everywhere across the State under 35 Ill. Adm. Code 302.209. The reason that the Board in 1985

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restricted or no longer required disinfection was that it found chlorination practices at that time were causing significant harm to aquatic life. In the Matter of Amendments to Subtitle C: Water Pollution, Fecal Coliform and Seasonal Disinfection R85-29 (June 30, 1988). This concern is no longer valid given the fact that wastewater treatment plants now successfully rely on dechlorination as well as forms of disinfection that do not use chlorine.

Further, while perhaps the CAWS was still distasteful enough in the 1980's to discourage people from using it, despite its proximity to parks and residences, the public testimony placed into the record during the June 16, 2008 proceeding makes clear that this is no longer the case. Illinois regulations in effect require seasonal disinfection for "protected waters," which include those that "flow through or adjacent to parks or residential areas." 35 Ill. Adm. Code 302.209(a)(2). "A protected water is thus more encompassing than the primary contact waters." Amendments to Subtitle C: Water Pollution. Fecal Coliform and Seasonal Disinfection, R85-29, p. 12. The Board explained the rationale for extending this protection in its 1988 Opinion:

Year-round relief [from disinfection] would not be allowed in streams that flow through residential neighborhoods and certain recreational areas. These streams may often invite public contact simply due to their accessible locations without regard to their sustainability for primary contact recreation. Streams in such locations would be treated as if primary contact were possible.
R84-29 at 12 (citing P.C. #27 at 3).

It is clear that this provision should apply to the vast stretches of the CAWS that "flow near, through or adjacent to parks or residential area" (35 Ill. Adm. Code 309.209 (a)(2)), justifying required disinfection of sewage discharged to the CAWS. When the Board initially set bacterial limits in 1972, it reasoned that "[e]ven if waters are not

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recommended for swimming because of other problems, such as turbidity, barge traffic, or dangerous currents, they should not pose a health hazard to those who do use them.”

In the Matter of Effluent Criteria (R70-8); In the Matter of Water Quality Standards Revisions (R71-14); In the Matter of Water Quality Standards Revisions for Intrastate Waters (R71-20) *consolidated* (Mar. 7, 1972), p. 8.

C. The alleged “deficiencies” in IEPA’s proposal are chimerical.

Many of the “deficiencies” alleged in the MWRDGC Motion are based on its distortion of the record. For example, the MWRDGC claims the IEPA conceded that it could not define a non-arbitrary line to distinguish between Aquatic Life Use A waters and Aquatic Life Use B waters. (MWRDGC Motion, p. 6). To the contrary, IEPA’s Roy Smogor described QHEI scores that fell into two distinct groups that became Use A and Use B waters. (March 10, 2008 Transcript, pp. 28-29). Similarly, the MWRDGC assails supposed failings of other evidence used to support the designations suggested by the QHEI, and insinuates that the IEPA failed to consider benthic and sediment conditions in making its use attainability decisions. (MWRDGC Motion, p. 7). In fact, the IEPA stated repeatedly that it considered existing benthic and sediment data in the weight of evidence consideration. (March 10, 2008 Transcript, pp. 20-21). In the passage cited by MWRDGC, Mr. Smogor explained why the data on benthic and sediment conditions could not be compared directly to the other data sets that were used to assess habitat conditions. (March 10, 2008 Transcript, pp. 22-23). He never conceded that these issues were ignored or overlooked by IEPA.

The MWRDGC attempts to make much of some corrections to fish Index of Biological Integrity (IBI) score calculations, as if the corrections would have some

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serious impact on the use designation decisions. (MWRDGC Motion, p. 8). However, IBI scores are necessarily measures of the *existing* species assemblage, not the *attainable* use. (April 23, 2008 Transcript, p. 211). IEPA witnesses repeatedly stated that attainability must be based on an analysis of physical habitat conditions. (April 23, 2008 Transcript, p. 214). The current IBI scores were compared against the QHEI to corroborate the designations and get a sense of the stressors on the system. (April 23, 2008 Transcript, p. 211-214).

The MWRDGC also tries to undermine the CAWS Aquatic Life Use A designation by misrepresenting the testimony regarding fish spawning, claiming that IEPA conceded there was no data showing that spawning occurs in these waterways. (MWRDGC Motion, p. 7). To the contrary, Mr. Smogor testified that the Agency had evidence of fish spawning in Aquatic Life Use A waters in the form of sub-adult fish individuals present in samples taken by MWRDGC. (March 10, 2008 Transcript, pp. 74-75; March 11, 2008 Transcript, p. 232). He explained that limitations in the sampling equipment were the reason larval fish were not found in the samples, but that the existence of sub-adult fish is sufficient to infer spawning in the area. (March 10, 2008 Transcript, pp. 75-76).

The MWRDGC also attempts to delay the proceeding on the basis that IEPA has not determined whether the proposed designated aquatic life uses are consistent with Illinois Department of Natural Resources fisheries management plans. (MWRDGC Motion, p. 6). As is the case with many of the supposed deficiencies the MWRDGC alleges, the factual record will be further developed during the upcoming hearings being held for that explicit purpose. In any case, there is no reason why the absence of

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information concerning fishery management plans should be allowed to delay this rulemaking or in any way prejudice the proposal.

Regarding sediment, the MWRDGC claims the IEPA conceded that it was required to look at sediment data to evaluate habitat issues but failed to do so. (MWRDGC Motion, p.6). Mr. Chris Yoder actually testified that sediment data was *not* appropriate to factor into a QHEI study because the QHEI measures physical habitat, not chemical parameters. (February 1, 2008 Transcript, pp. 181-182). He stated that a study of chemical parameters could include sediment toxicity data, but did not state that this data was “necessary” as the MWRDGC suggests. (February 1, 2008 Transcript, p. 182). The MWRDGC also claims the IEPA admitted that its assertion that sediment quality is improving is not supported by sufficient data. (MWRDGC Motion, p. 7). But Mr. Sulski admitted no such thing. Instead, he testified that the IEPA based its assessment of improved sediment quality on a reduction in sediment volumes, pretreatment programs, stormwater programs and mercury collection programs. (March 10, 2008 Transcript, pp. 24-26).

MWRDGC suggests that this proceeding should be suspended in part because IEPA cannot say “whether the control measures recommended in the UAA would lead to 100% attainment of the standards in all parts of the CAWS.” (MWRDGC Motion, pp. 7, 8). But this is not the legal standard. The IEPA does not have an obligation to propose standards that can be met easily, let alone 100% of the time. In fact, IEPA can propose and the Board can adopt standards that initially cannot be met in order to force improvements to existing technology. *Granite City Steel*, 155 Ill. 2d at 182-83, 613 N.E. 2d at 734.

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Regarding recreational uses, MWRDGC again distorts and misstates both the applicable standard and the record. The fact that IEPA does not have the “proper indicator to assure protection of recreational users” (MWRDGC Motion, p. 5) is completely irrelevant given that IEPA did not propose an ambient pathogen standard applicable to any portion of the CAWS. Rather, the IEPA proposed effluent standards that, if complied with by MWRDGC, will assure that it disinfects its effluent so that pathogens that its plants would otherwise discharge during dry weather conditions will not be alive to make people sick.

IEPA did not, as the MWRDGC claims, admit that proposed recreational uses are unsafe. (MWRDGC Motion, p. 9). IEPA’s Rob Sulski testified that the Agency was protecting existing uses regardless of whether everyone would consider them safe or not. (January 29, 2008 Transcript, p. 222). Neither did IEPA concede that the prospect of water quality improvements was unfounded. In fact, Mr. Sulski testified that in a system dominated by wastewater effluent, removing the source of pathogens in that effluent would quite logically reduce the numbers of pathogens found in the system. (January 29, 2008 Transcript, p. 190). Mr. Scott Twait further explained that disinfection can bring levels of fecal coliform indicator bacteria (which signal the presence of other pathogens) in the effluent down from 5,000-100,000 fecal coliforms per 100 mL to 100-400 fecal coliforms per 100 mL. (January 29, 2008 Transcript, pp. 190-92; *see also* Orris Affidavit, p. 14). As Mr. Twait stated, the specific purpose of the fecal coliform discharge standard is to ensure that disinfection is accomplished. (January 29, 2008 Transcript p. 180).

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The MWRDGC claims that IEPA did not analyze the feasibility of various disinfection technologies (MWRDGC Motion, p. 9), but gives no reason why IEPA had to do so. There is none. The effluent standard IEPA has proposed would simply require the MWRDGC to reduce fecal coliform levels in its effluent to below 400 per 100 ml. The standard does not specify a technology to meet that standard, and the MWRDGC would be free to choose any one that would achieve that standard. (*See* March 10, 2008 Transcript, pp. 49-50). MWRDGC cannot claim with a straight face that it is not capable of meeting this effluent standard, since a huge number of Illinois dischargers as well as almost all of the major municipalities in North America do so.

The MWRDGC also raises the issue of other sources of pathogens in the system (such as combined sewer overflows), implying that IEPA cannot set standards for effluent without accounting for all potential sources. (MWRDGC Motion, pp. 5, 6, 7, 9). In fact, the IEPA considered CSOs and MS4s (contrary to the MWRDGC's claims that they were ignored), and decided that the volume and frequency of discharges from these intermittent sources is relatively small in proportion to the large and constant flow of effluent discharged into the CAWS from wastewater treatment plants. (April 23, 2008 Transcript, pp. 77-79). As Ms. Deborah Williams testified, IEPA has the authority to set effluent standards such as the disinfection standard proposed in this rulemaking. (March 10, 2008 Transcript, pp. 50-51). Certainly, the IEPA and the Board are not required to solve every water quality problem before they adopt rules designed to solve some of them. *See People v. PCB, et al.*, 103 Ill.2d 441, 451, 469 N.E.2d 1102, 1108 (Ill. 1984).

MWRDGC also implies that IEPA should have investigated "unintended environmental consequences of disinfection and artificial supplementation of dissolved

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oxygen” (MWRDGC, pp. 5-6), as though energy consumption is an excuse for failing to comply with the Clean Water Act mandate to protect human health and the environment from contaminants, such as pathogens. We reiterate that wastewater treatment plants across the nation are relying ultraviolet disinfection systems without energy consumption being a barrier to such usage. See Dussert, Bertrand W., “*The Future Looks Bright: Ultraviolet Irradiation Systems Are Rapidly Gaining Traction in The Water Treatment, Wastewater Treatment And Water Reuse Markets,*” *Water Environment and Technology*, V.20 No. 6 (June 2008). If MWRDGC is of the opinion that the cost of energy is so expensive that it warrants failing to protect water quality, it can present its evidence in this proceeding. Perhaps MWRDGC could also seek to suspend construction of the Deep Tunnel project, or operation of its treatment plants altogether on the same basis. MWRDGC cannot sensibly ask that the Board suspend this proceeding because IEPA has not investigated the remote possibility that water pollution control practices that are standard across the country should be scrapped to save energy.

Finally, MWRDGC suggests that this proceeding be suspended because of IEPA’s failure to analyze the costs of meeting the proposed dissolved oxygen standard and makes an unsupported remark that disinfection will cost billions of dollars.

(MWRDGC Motion pp. 9, 10). However, nothing in federal or state law requires that IEPA present such evidence, and the law is clear that economic costs of compliance are not determinative. *Granite City Steel*, 155 Ill. 2d at 181; 613 N.E. 2d at 734.

II. The Board should not wait until the studies MWRDGC discusses are completed.

MWRDGC also argues that the Board should delay this proceeding to allow it to complete a number of studies that it states it has recently undertaken, the last of which is

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“planned to be completed by the end of 2010.” (MWRDGC Motion, p. 14). No explanation is given as to why, if these studies are so important, they were not started in or before 2003. In any event, the studies discussed by MWRDGC are far from indispensable to this proceeding. Many of them are not even relevant.

The principal study cited by MWRDGC is the ongoing epidemiological study being conducted by UIC, now scheduled for completion in early 2010. However, Dr. Peter Orris, a leading professor and physician at UIC and colleague of the principle researcher on the epidemiological study, states very clearly that the study is *not* a sound basis to delay this proceeding. Dr. Orris, while praising the study itself, makes clear epidemiological studies of this type are “blunt instruments.” Affidavit of Peter Orris at 20. Even a negative study outcome – that is, a finding of no additional illnesses among CAWS recreational users – would not be a good basis for failing to protect public health through disinfection. Dr. Orris describes the many reasons why an epidemiological study of this nature can easily fail to detect very real risks, including most notably the unlikelihood of finding a large enough sample of the most at-risk individuals – e.g. children and boaters who accidentally fall in the water. As explained in Professor Orris’ affidavit:

[D]elaying disinfection at the MWRD facilities pending the outcome of the single study being conducted by my colleagues at the UIC School of Public Health on behalf of MWRD would be seriously misguided. It has long been established that waterborne pathogens associated with sewage are hazardous to public health. Perhaps no other area of medicine has been as well established for as long. No single epidemiological study – no matter how well designed and executed, and no matter what the ultimate result – is a sufficient basis to refuse to address waterborne pathogens in the CAWS.

An epidemiological study gives us the risk of events that may occur to a certain number of individuals within a population. In this

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situation, we are concerned in substantial part with unexpected events (falling in the water) affecting especially vulnerable individuals, such as young children, and having potentially dire effects. This scenario is not susceptible to epidemiological conclusions about risk in the establishment of precautionary public policy. This precautionary rationale suggests, for instance, that a community should not hesitate to install a traffic light on a street corner because an epidemiological study indicated that only one child in the neighborhood was likely to die at the corner each decade if everyone obeyed the speed limits.

This reality is reflected in the proposed regulations of the IEPA, as well as in current practice in Illinois and throughout the nation.

Affidavit of Peter Orris, pp. 3-5. Dr. Orris also notes that epidemiological studies are limited by the constantly fluctuating variables (e.g. water temperature and sunlight) that can impact the level of pathogens at any given time. Affidavit of Peter Orris, p. 23.

Dr. Orris further explains that significant, currently well-established risk to public health is posed inherently by the presence of pathogens in the water. *See* Affidavit of Peter Orris, pp. 13-16. These types of bacteria cause millions of cases of illness in the United States each year, some of them serious (particularly, once again, for children); and could infect any CAWS user who accidentally swallowed a mouthful (which can happen to anyone who falls in the water accidentally). As Dr. Orris explains, even though the epidemiological study may prove generally useful in enhancing our overall understanding of recreational health risks, it makes no sense to put off addressing a very serious health risk of this nature in order to wait for results that will not, by their nature, disprove that risk. Affidavit of Peter Orris, pp. 3-5, 24-25.

The other studies that MWRDGC proposes to use as an excuse to delay remedying a serious public health problem are either irrelevant to this proceeding or are

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important only in that they will assist in developing future water quality criteria to replace the technology-based effluent limits for fecal coliform.

Any studies that MWRDGC may undertake regarding the various alternative forms of disinfection and the financial and environmental costs of these alternatives (MWRDGC Motion, p. 11) may be very useful in designing the type of disinfection that will be used by MWRDGC. However, these studies certainly will not show that disinfection is technically, ecologically or economically infeasible because it is very well established that disinfection of sanitary wastewater has become commonplace throughout most of Illinois and in virtually every other major municipality in the country.

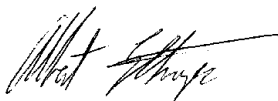
The significance of other MWRDGC studies is less clear, since these studies are not well described. We might give MWRDGC the benefit of the doubt that these studies could be relevant as to how the standards at issue here should be implemented, but MWRDGC has not made any showing of how these studies bear on this proceeding.

Moreover, it is clear that MWRD must conduct some of the studies anyway, and implement several of the pollution control solutions that MWRDGC is resisting, regardless of the outcome of this rulemaking. For example, the record is quite clear that combined sewer overflows and other factors are now causing dissolved oxygen levels in some parts of the CAWS to fall to zero. This is a clear violation of the standards currently applicable to the CAWS under 35 Ill. Adm. Code 302.405. If the MWRDGC attempts in this proceeding to demonstrate that costs or “environmental consequences” require that the IEPA proposal be denied, we will expect MWRDGC to be careful to separate what is needed to meet the proposed standards in this proceeding from what it is required to meet by current standards that have been in place for decades.

III. Conclusion

MWRDGC's motion to suspend this proceeding should be denied. Indeed, while recognizing that the Board must deal with many important issues, the Environmental Advocates ask that the Board expedite this proceeding to the extent possible to protect public health and the environment.

Respectfully submitted,



Albert Ettinger, Senior Staff Attorney
Jessica Dexter, Staff Attorney
Council for Environmental Law and Policy Center, Friends of the
Chicago River and Sierra Club, Illinois Chapter



Ann Alexander
Senior Attorney
Natural Resources
Defense Council



Stacy Meyers-Glen
Openlands

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)
)
WATER QUALITY STANDARDS AND)
EFFLUENT LIMITATIONS FOR THE) R08-9
CHICAGO AREA WATERWAY SYSTEM) (Rulemaking – Water)
AND THE LOWER DES PLAINES RIVER:)
PROPOSED AMENDMENTS TO 35 ILL.)
ADM. CODE PARTS 301, 302, 303, AND 304)

AFFIDAVIT OF PETER ORRIS

Peter Orris, M.D., M.P.H., being duly sworn, deposes and says:

Introduction

1. I am a Professor and Chief of Occupational and Environmental Medicine at the University of Illinois at Chicago (“UIC”) Medical Center. I submit this affidavit in support of the regulations proposed by Illinois Environmental Protection Agency (“IEPA”) that would require disinfection of effluent from the Metropolitan Water Reclamation District (“MWRD”) wastewater treatment plants (“WWTPs”) discharging into the Chicago Area Waterway System (“CAWS”), and in opposition to MWRD’s motion to stay the proceedings concerning the rule proposal before the Pollution Control Board.

2. I fully support the MWRD’s emphasis on increasing our knowledge of the health effects of human usage of the waterways in the Chicago area through the design and implementation of epidemiological studies. These studies may well add to our understanding of human health effects of recreational use of these waterways, and may have implications for other settings as well. Such studies may aid in crafting preventive policies for the safe use of these waterways.

3. Yet, based on my extensive experience with the science of epidemiology, and my understanding of both its capabilities and limits, I believe that delaying disinfection at the MWRD facilities pending the outcome of the single study being conducted by my colleagues at the UIC School of Public Health on behalf of MWRD would be seriously misguided. It has long been established that waterborne pathogens associated with sewage are hazardous to public health. Perhaps no other area of medicine has been as well established for as long. No single epidemiological study – no matter how well designed and executed, and no matter what the ultimate result – is a sufficient basis to refuse to address waterborne pathogens in the CAWS.

4. An epidemiological study gives us the risk of events that may occur to a certain number of individuals within a population. In this situation, we are concerned in substantial part with unexpected events (falling in the water) affecting especially vulnerable individuals, such as young children, and having potentially dire effects. This scenario is not susceptible to epidemiological conclusions about risk in the establishment of precautionary public policy. The precautionary rationale in this situation is analogous to advising that a community should not hesitate to install a traffic light on a street corner because an epidemiological study indicated that only one child in the neighborhood was likely to die at the corner each decade if everyone obeyed the speed limits.

5. This reality is reflected in the proposed regulations of the IEPA, as well as in current practice in Illinois and throughout the nation. I support this approach, and believe it is appropriate public policy based our current knowledge of the use of the waterways and potential hazard of exposure to waterborne pathogens.

Qualifications

6. A copy of my curriculum vitae is attached as Exhibit 1.

7. My educational degrees include the following: (a) M.D., Chicago Medical School, 1975; (b) Master of Public Health, Yale University, 1970; and (c) B.A., Harvard College, 1967.

8. My current professional appointments include the following: (a) Adjunct Professor of Occupational and Environmental Medicine and Chief of Service, Occupational and Environmental Medicine, UIC Medical Center, (b) Director, Occupational Health Services Institute (the "Institute"), Great Lakes Center for Occupational & Environmental Safety & Health, UIC School of Public Health; (c) Professor of Internal and Preventive Medicine, Rush University College of Medicine; (d) Adjunct Professor of Preventive Medicine, Northwestern University Feinberg School of Medicine; (e) Attending Physician, Stroger Hospital of Cook County.

9. As detailed in Exhibit 1, I have published peer-reviewed academic journal articles on issues pertaining to public health, and have extensive experience as an editor and reviewer of public health journals.

10. As a public health specialist, I have extensive opportunity and need to review epidemiological research and, where appropriate, apply it in my professional decisionmaking – both as a treating physician and as a policy specialist. During the decade I have served as Director of the Great Lakes Center's Health Hazard Evaluation Program, I have been responsible, among other things, for a joint initiative with the Illinois Department of Public Health that provides industry and communities with expertise in the planning and execution of environmental epidemiological studies.

Risks of waterborne pathogens associated with sewage

11. It is well established that pathogens associated with human sewage can cause serious illness. There are many hundreds of bacteria, viruses, and parasites that can be present in water contaminated with undisinfected sewage. Many of them are quite dangerous to humans if the water is ingested, even in small amounts.

12. These waterborne pathogens are particularly dangerous to children, the elderly, pregnant women, and those with compromised immune systems such as people undergoing chemotherapy. These sensitive populations are more likely to contract serious illness from contact with sewage-contaminated water, and any resulting infection is likely to be more severe and dangerous than it would be for a healthy adult.

13. A few examples of the pathogens generally associated with ingesting sewage-contaminated water, and the illnesses they cause, are as follows:

- a. Cryptosporidium. Causes: diarrhea (which can lead to dehydration and other complications in sensitive populations). Cryptosporidium in drinking water caused the largest documented waterborne disease outbreak in U.S. history in Milwaukee in 1993, resulting in more than 400,000 illnesses and 100 deaths.
- b. Campylobacter. Causes: gastroenteritis (symptoms include nausea, vomiting, diarrhea, and abdominal pain). There are about 4 million cases of campylobacter infection per year in the U.S.
- c. Giardia lamblia. Causes: diarrhea. Giardia may be the most common cause of non-bacterial diarrhea in North America. Infections may be difficult to treat and can last for many months.

- d. Hepatitis A virus. Causes: infectious hepatitis. Hepatitis A tends to occur in epidemics and outbreaks due to its infectivity. Also people can be infected by the virus and not themselves become ill but can spread the disease to others.
- e. Coxsackie virus. Causes: hemorrhagic conjunctivitis and in some cases lead to viral meningitis, encephalitis, and myocarditis (infection of the heart muscle). The coxsackie virus is believed to cause more than 10 million symptomatic infections per year in the U.S.
- f. Echovirus. Causes: fever, diarrhea, meningitis. Echovirus primarily infects children, and can cause severe illness. Echoviruses are believed to cause more than 10 million symptomatic infections per year in the U.S.
- g. Salmonella. Causes: salmonellosis (resulting in diarrhea, fever, vomiting, cramps, and on occasion long-term reactive arthritis), or typhoid fever. Salmonella is one of the most common waterborne pathogens, and causes 2 to 4 million cases of illness per year in the U.S.
- h. Rotavirus. Causes: diarrhea, vomiting. Rotavirus is a leading cause of diarrhea in young children in the U.S.
- i. Pathogenic E. coli. Causes: gastroenteritis, and potentially hemolytic uremic syndrome. Hemolytic uremic syndrome can lead to permanent kidney damage or death. Young children and the elderly are particularly vulnerable to this illness.

14. I have reviewed the summary of MWRD sampling data from the CAWS attached as Exhibit 2, which shows high levels of both fecal coliform and E. coli indicator bacteria (note

that the indicator strain of E. coli bacteria is distinct from the pathogenic, i.e., disease-causing, strain of E. coli bacteria).

15. Indicator bacteria are not a perfect reflection of pathogenic bacteria levels, and do not provide specific information as to the precise pathogens present in water at any given time. However, high levels of indicator bacteria are strongly associated with the concomitant presence of harmful waterborne pathogens. Indeed, indicator bacteria often under-predict the presence of human pathogens, because many such pathogens are present even in the absence of the indicator bacteria. Here, the high levels of indicator bacteria found in the CAWS are very likely correlated with the presence of waterborne pathogens that threaten human health.

16. Ingestion of relatively small amounts of sewage-contaminated water can result in infection. Thus, accidental ingestion of a mouthful of water during boating or other recreational activity, for example from falling out of a canoe or kayak or falling into the water while wading, carries a risk of illness.

Limits of epidemiological studies for assessing risk

17. I am aware that my colleague, Sam Dorevitch, MD, MPH, a UIC School of Public Health Assistant Professor, is the principle researcher on an epidemiological study being conducted for MWRD. The purpose of the study is to further understand the health risks to humans from the recreational use of the CAWS, including secondary contact activities such as canoeing, kayaking, rowing, fishing, and other related activities.

18. I have the utmost respect for Dr. Dorevitch. While I have not reviewed his methodology in detail, I believe based on the study plans and design that it is a balanced, well designed study which will produce useful information. I know Dr. Dorevitch to be a thorough and highly competent scientist who has a reputation for high-quality work.

19. However, for the reasons stated above, I do not believe that the epidemiologic study being conducted by Dr. Dorevitch is a sufficient basis to suspend progress toward implementation of the vitally important regulations proposed by IEPA requiring disinfection of MWRD sewage effluent. Even assuming the study does not identify an increased rate of health problems amongst the subjects, such a result would not provide a sufficient basis to conclude that disinfection is unnecessary as it cannot reflect the potential danger of unintended ingestions and significant exposures to especially vulnerable individuals.

20. More specifically, it would be ill advised to draw policy conclusions – particularly conclusions on so well documented, and historically important, a subject as protecting the public from waterborne pathogens – from any negative result in a single epidemiological study. Epidemiological studies are by nature blunt instruments, based in our everyday world with multiple influences, and the inherent power problems of negative results. Illness in recreational users of the CAWS may well be missed even in this excellent first epidemiologic look at this issue.

21. A complicating factor with respect to the ability of this study to identify disease amongst these recreational users of the CAWS is the issue of particularly vulnerable sub-groups such as young children. That is, even if a researcher has a large overall population sample, if the researcher is attempting to gather data concerning individual subsets of that sample, then each of those subsets must be large enough to produce a statistically reliable result.

22. Compounding the problem is the fact that even within these higher-risk subgroups, the highest risk is to those who actually fall into the water. The likelihood of amassing a sufficiently large cohort of study participants who have fallen in the water while using the CAWS is remote. There may be real and very significant risk associated with falling

in, particularly to vulnerable sub-groups, but that level of risk would likely be masked by data associated with lower-risk uses, resulting in a false negative result.

23. An additional limitation specific to epidemiological studies concerning waterborne pathogens is that the presence of those pathogens is highly dependent on ephemeral variables. That is, the actual number of disease-causing bacteria, viruses and parasites varies greatly according to such ever-changing factors as the amount of sunlight hitting the water and the water temperature. Thus, users in one part of the water where these variables are increasing the level of pathogens (e.g., higher temperature waters) might have significantly higher illness rates than users in another part of the water where these variables result in lower levels of pathogens (e.g., lower temperature waters). But when these results are lumped together, they would statistically cancel each other out, creating an overall negative result.

Conclusions

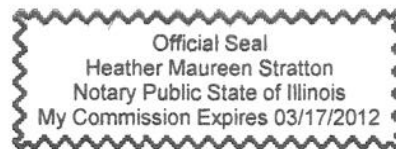
24. I am a strong supporter of scientific research, and am very pleased that UIC is involved, through Dr. Dorevitch, in the epidemiological study of CAWS recreational use. I will be very interested to see the results of the study when they are finally available, whether they are positive or negative in terms of a finding of risk.

25. However, I believe it would be a serious mistake to place too much significance on any possible negative result of the study, and an even more serious mistake to delay consideration of the proposed IEPA regulations requiring disinfection pending the results of the study. Every year in which disinfection does not occur puts users of the CAWS at risk of infection, and discourages additional members of the public from making full use of the waterway out of fear for their health and safety. It would be improper to use the mere possibility

of negative epidemiological study results as a reason to prolong the risk to the public from sewage-contaminated water.



Peter Orris, M.D., M.P.H.



CURRICULUM VITAE

June 1, 2008

PETER ORRIS, MD, MPH, FACP, FACOEM

RESIDENCE

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BUSINESS

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BIRTH DATE

October 7, 1945

BIRTHPLACE

Los Angeles, California

EDUCATION

Undergraduate
Graduate

1967 B.A.
1970 M.P.H.
1975 M.D.

Harvard College
Yale University
Chicago Medical School

Residencies

1975-8 Internal Medicine
1977-9 Occupational Med.

Cook County Hospital
Cook County Hospital

Additional

1965 Bio-medical Electronics
1968 Advanced Circuit Theory
1979 UICC/ILO System of
Radiographic Evaluation
of Pneumoconiosis
1995,7+ Medical Review Officer
2001,3 training Courses

Harvard University
Harvard University
American College of
Chest Physicians
Amer College of Occupational
& Environmental Medicine

CERTIFICATION AND LICENSES

1976-

State of Illinois, Physician and Surgeon, #36-53014

1979-

Diplomat, American Board of Preventive Medicine
in Occupational Medicine

2001-

Certified Medical Review Officer #01-04536

POSITIONS

2000-

Chief of Service, Occupational and Environmental Medicine
University of Illinois at Chicago Hospital and Medical Center

2000-

Director, Global Chemicals Policy Center, Great Lakes Centers For
Occupational & Environmental Safety & Hlth, UIC School of Public
Health,

1999-

Director, Occupational Health Services Institute, UIC School of Public
Health,

1979- Senior Attending Physician (Voluntary), Stroger Hospital of Cook County

ACADEMIC APPOINTMENTS

Professor of Internal and Preventive Medicine
Rush University College of Medicine
Adjunct Professor of Environmental & Occupational Health Sciences
University of Illinois at Chicago School of Public Health
Adjunct Professor of Preventive Medicine
Northwestern University Medical School

HOSPITAL STAFF APPOINTMENTS

2005- Rush University Medical Center (Attending)
1999- U. of I. Hosp & Medical Center (Attending)
1979- Cook County Hospital (Voluntary Senior Attending)

AWARDS AND HONORS

2007 Humanitarian For Healthcare Award, Cook County Board, Illinois
2007 Letter of Congratulations from the Governor of Illinois
2006 Certificate of Appreciation, World Federation of Public Health Assoc.
2005 Selection as a "Best Doctor" in the United States, Castle Connelly Pub
2005 Outstanding Service Award, Executive Medical Staff of Stroger Hosp.
2004 Certificate of Appreciation, University of the Philippines, Manila
2003 Certificate of Appreciation, Illinois State Medical Society
2001 Certificate of Appreciation, Arab Community Center for Economic and
Social Services Community Health and Research Center, Dearborn, MI
2001 Selection as a "Top Doctor" in Chicago Metro Area, Castle-Connolly
2000 Certificate of Appreciation, World Federation of Public Health Assoc.
1999 Certificates of Appreciation, American Medical Student Association, APHA
Occupational Health & Safety Section, Mt. Sinai Family Practice, Air and
Waste Management Association
1998 Certificates of Appreciation- Greenpeace USA, Peace Corps, Chicago
Medical Society
1992- Fellow, American College of Physicians
1988- Fellow, American College of Occupational and Environmental Medicine
1986 Certificate of Recognition, Health Policy Agenda For the Amer People
1984-8 Fellow, American Academy of Occupational Medicine
1981 Certificate of Appreciation, Nat'l Safety Council
1980-9 Fellow, American College of Preventive Medicine
1973 Ciba Community Affairs Award

PROFESSIONAL JOURNAL ACTIVITIES

Canadian Medical Association Journal (reviewer)
American Journal of Industrial Medicine (Contributing Editor)
Journal of Public Health Policy (Management Committee & Editorial Board)
Revista Cubana De Salud Y Trabajo (Member, Editorial Board)
New Solutions (Member, Editorial Board)

American Journal of Public Health, (Reviewer)
Environmental Research (Reviewer)
Journal of the American Medical Association (Reviewer)
Journal of Occupational and Environmental Medicine (Reviewer)
Journal of Health Services Research (Reviewer)
Environmental Toxicology and Pharmacology Journal (Reviewer)

PROFESSIONAL SOCIETY MEMBERSHIPS

American College of Occupational and Environmental Medicine
American College of Physicians
American Medical Association
American Public Health Association
Association of Occupational and Environmental Health Clinics
Central States Occupational Medical Association
Cook County & Illinois State Medical Societies
Illinois Public Health Association
International Commission on Occupational Health
Medical Directors Club of Chicago
Physicians for a National Health Program
Physicians Forum
Physicians for Social Responsibility
Society for Occupational and Environmental Health

CURRENT APPOINTED OR ELECTED POSITIONS

Hospital:

2006-	Doctors Council, Cook County Bureau of Health Services, SEIU	2005-
2005-	Immediate Past President, Stroger Hospital Medical Staff	
1982-	Institutional Review Board, Cook County Bureau of Health Services (Co-Chair, 1991-4, Chair, 1994-2007)	

Professional Societies:

2007-	Chair, Public Health and Environment Committee of the World Federation of Public Health Associations
2002-	Director of Continuing Medical Education, Medical Directors Club of Chicago
1999-	Policy Committee, World Federation of Public Health Associations
1997-	Director, World Federation of Public Health Associations Persistent Organic Pollutants Project – Human Health Effects of Chemicals Project.
1993-	Delegate, Illinois State Medical Society
1992-	Councilor, Chicago Medical Society

COMMUNITY OR GOVERNMENT:

2007-	Member, Scientific Advisory Committee, World Trade Center Medical Programs, Mount Sinai School of Medicine, New York
2006-	Member, State of Illinois Board of Health
2005-	Advisor, United Nations Development Program/Global Environmental Facility Health Care Waste Project
2004-	Advisor, Healthy Schools Campaign

- 2004- Member, Board of Directors, Safer Pest Control Project
- 2002- Member, Executive Board, Illinois Safety Council
- 2001- Member, Board of Directors, Hecktoen Institute For Medical Research
- 2001- Advisor, Community Organizations in Chicago, Mossville, Norco, and New Sarpy, Louisiana, and Durban, South Africa.
- 2001- Member, Working Group on Occupational Health and Safety Intergovernmental Forum on Chemical Safety (IFCS)
- 2000- Medical Advisor, AFSCME Council 31
- 2000- Medical Advisor, Midwest Generation, LLC
- 1998- Advisor, Health Care Without Harm
- 1996- Senior Medical Advisor, Greenpeace, USA
- 1995- Medical Advisory Committee, John Redmond Foundation, International Association of Firefighters, AFL-CIO
- 1995- US Co- Chair, Health Professionals Task Force, International Joint Commission of the US and Canada
- 1993- Medical Advisory Com., Intern'l Brotherhood of Teamsters, AFL-CIO
- 1991- Hazmat Project Adv Bd, Service Employees Interntnl Union,AFL-CIO

GOVERNMENT CONTRACTS:

- 2002 Contract X97523001-0, \$15,000, for consulting to EPA Central Office by organizing and performing a Peer Review of a report.
- 2004 Contract 200-199-00058, \$2,000 through Eastern Research Group for consulting to ATSDR by performing a Peer Review of a report
- 2007 Technical Medical Review of Commercial Truck and Bus safety Synthesis Program - Synthesis 15, for Federal Motor Carrier Safety Administration, "Health and Wellness Programs for Commercial Drivers" Krueger, G.P. et al Transportation Research Board, National Academies, Washington, D.C. 2007

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- Kahn, H.S., Orris, P., The Emerging Role of Salaried Physicians: An Organizational Proposal J Public Health Policy. 1982 Sep; 3(3): 284-292
- Orris, P. Kennedy, M.J. Guerriero, J. Hessel, S.M. Hryhorczuk, D.O. and Hoffman, D. Activities Of An Employer Independent Occupational Med Clinic Am J Public Health. 1982 Oct; 72(10) 1165-7
- Orris, P. Sociology of Health and Medical Care: Citizen Involvement in Cuba: 1959-1980 Sociology of Medicine Series, No. 81, Red Feather Institute for Advanced Studies in Sociology, Livermore, Colorado, December, 1980, Revised September, 1981,
- John, E.R., Kimmelman, D.R, Haas, J., Orris, P.. The Cuban Health System Social Policy. 1971 Jan; 41-46,

Other Refereed Material:

- Halpin, J., Buchanan, S., Orris P., Hotel Housekeeper Injuries: Analysis In The Face Of Incomplete Data, (Abstract) International Commission on Occupational Health, Milan, Italy June 2006
- Orris, P. Dioxins and Health by Schechter and Gasiewicz, (book review), Journal of Occupational & Environmental Medicine, JOEM, 47:4, April 2005, P. 436
- Orris, P. Fifty Years of Hope and Concern for the Future Of Occupational Medicine (letter), JOEM, 46:6, June 2004, P. 515
- Meeks, P., Orris, P. Petrochemical Production And Community Health (Abstract) Proceedings, Eighth World Congress on Environmental Health, Durban, South Africa, February 24, 2004
- Orris, P. Forst, L. Obstacles And Opportunities Presented By Globalization For Occupational And Environmental Health (Abstract) Proceedings, Eighth World Congress on Environmental Health, Durban, South Africa, February 23, 2004
- Obafemi, A. Orris, P. Lead Toxicokinetics and Treatment, Proceedings International Seminar on Environmental and Occupational Lead Intoxication, Havana, Cuba, May, 1999, (in Press)
- Frumkin, H., Orris, P., Evidence of Excess Cancer Mortality in a Cohort of Workers Exposed to Polychlorinated Biphenyls (Letter), JOEM, 1999 Sept; 41(9), 741-2
- Brodkin, CA. Frumkin, H. Kirkland, KH. Orris, P. Schenk, M. Mohr, S. Choosing a Professional Code for Ethical Conduct in Occupational and Environmental Medicine (Editorial), JOEM, 1998 Oct; 40(10), 840-2
- Connett, P. et. al. Deep Concern about ICEM-CCC Sustainability Agreement (Letter), New Solutions, 1997; 7(3), 10-12
- Orris, P. Asbestos (Letter), Scientific American, Sept. 1997,
- Orris, P., Book Review: Healing the Masses: Cuban Health Politics at Home and Abroad, Jr of Pub Hlth Pol, 1996; 17(2), 244-6
- Orris, P. Controversy Over Chlorine: A Proposal by Peter Orris, New Solutions, 1993; 4(1), 3-4
- Orris, P., Book Review: Advances in Occupational Medicine, Jr of Pub Hlth Pol, 1985; 6(4), 563-564,
- Orris, P., Unjustified Conclusion?(Letter) Jour of Occup Med, 1981 Jan; 23(1), 7
- Orris, P., The Role of the Consumer in the Cuban National Health System Master's Thesis, Yale University School of Public Health, February, 1970

Books, Book Chapters, and Monographs:

- Derr, J. Orris, P. Persistent Organic Pollutants (Chap. 45) in Textbook of Clinical Occupational and Environmental Medicine (Rosenstock, Cullen, Brodtkin, Redlich editors), Elsevier Saunders, 2005, P. 1061-73
- Orris, P. (Medical Consultant) Complete Medical Encyclopedia, Leikin, JB., Lipsky, MS., Editors, American Medical Association, Random House, New York, 2003
- Forst, L, Orris, P. (Ed) Ethics in the Workplace, State of the Art Reviews in Occupational Medicine, Oct –Dec, 2002, 17:4

- Mulloy, K, Orris, P., August, J. (Ed) Health and Safety of Municipal Employees, State of the Art Reviews in Occupational Medicine, Jan, 2001, 16:1,
- Orris, P., Katz-Chary, L., Perry, K, Asbury, J Persistent Organic Pollutants and Human Health, World Federation of Public Health Associations, May, 2000, Washington, DC
- Ross, M., Orris, P., Chlorine and Organochlorine Compounds, in Secrets of Occupational Medicine, Hanley Belfus, Philadelphia, 1999, P. 43-52
- Orris, P. (Ed) Occupational Health in the United States, Encyclopedia of Occupational Safety and Health, 4th Edition, International Labor Organization, Geneva, 1998; 16.32-44
- Orris, P. Morris, SL. Occupational Health in the United States: Introduction, Encyclopedia of Occupational Safety and Health, 4th Edition, International Labor Organization, Geneva, 1998; 16.32
- Orris, P., Melius, J., Duffy, R. (Eds) Firefighters' Safety and Health, State of the Art Reviews in Occupational Medicine, Hanley & Belfus, Philadelphia, 10:4, Oct- Dec, 1995
- Kranz, A. Orris, P., and Hessel, S.: Occupational Medicine in Preventive Medicine and Public Health John Wiley and Sons, New York, 1992
- Orris, P., Newkirk, W.L. Employee Screening and OSHA Compliance Services, and Ethical Issues in Occupational Health Services: A Guide to Program Planning and Management, American Hospital Publishing, Chicago, IL. 1989
- Orris, P. Cuban Health Care: A Case Study in Consumer Control. in Modern and Traditional Health Care in Developing Societies, University Press of America, Lanham, Mass. 1988
- Orris, P., Hessel, S., and Hryhorczuk, D.: Occupational Medicine a chapter in Preventive Medicine and Public Health, John Wiley and Sons, New York, 1987

Governmental Reports:

- Orris, P. Technical Medical Review of Commercial Truck and Bus safety Synthesis Program - Synthesis 15, sponsored by Federal Motor Carrier Safety Administration, "Health and Wellness Programs for Commercial Drivers" Krueger, G.P. et al., Transportation Research Board, National Academies, Washington, D.C. 2007
- Orris, P., Buchanan, S. Smiley, A., Davis, D., Dinges, D., Bergoffen, G. Literature Review on Health and Fatigue Issues Associated with Commercial Motor Vehicle Driver Hours of Work, Synthesis 9, Commercial Truck And Bus Safety Synthesis Program, Transportation Research Board, National Academy of Sciences – National Research Council, for the Federal Motor Carrier Safety Administration, May 05
- Health Professionals Task Force (Orris, P. Co-Chair), Great Lakes Fish Consumption Advisories: The Public Health Benefits and Risks, International Joint Commission (US – Canadian treaty organization) Jan 2004
- Goss, T.I., Turnbull, A., Nair, R., Smith, L., Orris, P., Da Ros, A., Cragg, S. Marchand, D. (Goss Gilroy Inc.) Health Study of Canadian Forces Personnel, prepared for the Gulf War Illness Advisory Committee, Department of National Defense, Federal Government of Canada, May, 1998

Illinois Health Hazard Evaluation Reports published by the Illinois Health Hazard Evaluation Program, a joint Project of the University of Illinois School of Public Health and the Illinois Department of Public Health

- Spring-Phillips, S. Pye, H. Orris, P. Outbreak Investigation: International Interior Design Association, IHHE 98H-001, 1998 July; 1-11
- Orris, P. Hartman, D. Strauss, P, Collins, J. Knopp, C. Xu, Y. Anderson, R. Initial Findings and

Recommendations Concerning the Psychological Effects of the Working Conditions of Package Truck Drivers at the United Parcel Service, IHHE Report 93-004, June, 1993

Hryhorczuck, D. Suero, M. Conroy, L. Orris, P. Toxicity Review of the Hobbico Lustrekote Paint Line HHE Report 95-005, August, 1995

NIOSH Health Hazard Evaluation Reports published by the Hazard Evaluation and Technical Assistance Branch, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, Cincinnati, Ohio

- Daniels, W. Orris, P. Kramkowski, R. Almaguer, D. Health Hazard Report 86-121-1923, Evaluation of Health effects of Electroplating, September 1988.
- Almaguer, D. Orris, P. Health Hazard Report 84-284-1701, Coal Tar Pitch Volatile Exposure at a Steel Mill, May, 1987.
- Zey, J.N., Orris, P., Almaguer, D. Health Hazard Report 84-528-1764, Hazards of Trocal Roofing Installation, June, 1986.
- Orris, P., Kominsky, J. Health Hazard Report 84-006-1639, Evaluation of A Potential Health Hazard Due To A Fire In A Polychlorinated Biphenyl Containing Transformer, Dec, 1985.
- Daniels, W., Arnold, S., Orris, P. Health Hazard Report 84-102-1653, Health Effects of Metal Grinding, January, 1986.
- Kramkowski, R. , Orris, P. Health Hazard Report 85-152-1684, Potential Health Hazards in A Printing Plant, April, 1986.
- Almaguer, D. Orris, P. Health Hazard Report 82-309-1630, Coal Tar Pitch Volatiles at a Coke Oven Battery, Oct. 1985,
- Daniels, W., Orris, P. Health Hazard Report 84-075-1634, Evaluation of Suspected Health Effects of Synthetic Coolants and additives Used In Metal Machining Operations, November, 1985
- Daniels, W., Orris, P. , Arnold, S. Health Hazard Report 83-325-1564, Evaluation of Asbestos Exposure and Monitoring program in A Drop Forge, February, 1985.
- Daniels, W., Orris, P. Health Hazard Report 84-046-1584, Health Effects of Ethylene Oxide and Trace anesthetic Gases In The Operating Rooms of A Public Hosp, April, 1985.
- Daniels, W. Orris, P. Kramkowski, R. Health Hazard Report 83-127-1434, Evaluation of Health Effects of Quality Control laboratory Work in A Barley Malting Plant, March 1984.
- Orris, P., Kominsky, J. Health Hazard Report 82-310-1475, Exposure to Polychlorinated Biphenyls At a Transformer Overheat, June 1984.
- Almaguer, D., Orris, P., Health Hazard Report 83-296-1491, Symptoms Amongst Assembly Line Employees In An Electrical Control Plant, July 1984.
- Orris, P., Health Hazard Report 81-157-1516, Evaluation of a Suspected Leukemia Cluster at a Steel Mill, October, 1984.
- Orris, P. Daniels, W. Health Hazard Report 80-112-1261, Effects of Iron Oxide Exposure in A Steel Tubing Mill, Feb.1983
- Orris, P. Cone, J, Dozier, E., McQuilkin, S. Health Hazard Report 80-096-1359, Health Effects of Vanadium Pentoxide In thermal Battery Manufacture, Aug. 1983.
- Orris, P. Health Hazard Report 82-239-1355, A Suspected Cancer Excess in an Electrical Coil Manufacturing Dept, Aug. 1983.
- Daniels, W. Orris, P., Health Hazard Report 81-465-1323, Hazards of Fertilizer Manufacture. , 1981
- Almaguer, D., Orris, P. Health Hazard Report 81-450-1378, Toxic Exposures of a Continuous Casting Blast Furnace, Oct. 1983
- Daniels, W., Orris, P., Pryor, P. Health Hazard Report 81-064-1035, Polychlorinated Biphenyl Exposure to

- Electrical Workers in a Steel Mill, January 1982
- Orris, P. Health Hazard Report 80-235-1056, Cancer Mortality of Electrical Workers in a Steel Rolling Mill, March 1982,
- Almaguer, D., Orris, P. Health Hazard Report 81-128-1107, Low Dose TDI Exposure in a Foam Seat Manufacturing Process, May 1982,
- Almaguer, D. Orris, P. Health Hazard Report 82-054-1194, Low Dose Solvent Exposure In A Small Engine Manufacturing Plant, Sept. 1982
- Daniels, W. Orris, P. Fagan, K. Health Hazard Report 81-299-1201, 992 Health Hazards of Diatomaceous Earth and Phosphoric Acid at a Manufacturing Plant in Chicago, November, 1981
- Orris, P., Almaguer, D., Health Hazard 81-185-1007 Health Effects of a Spray Paint and Shot Blast Process, November, 1981.
- Orris, P., Daniels, W., Health Hazard Report 80-201-816 Effects of 1,1,1, Trichloroethane on Spray Can Assembly Employees, Feb. 1980.

Non-Refereed Materials:

- Orris, P Lecture, Privacy and Confidentiality, at Ethics of Human Research Conference, http://www.uic.edu/sph/glakes/global/conferences/sofia2003/irb/Orris_Privacy.pdf, Sofia, Bulgaria June 3, 2003
- Paranzino, G., Orris, P., Kirkland, K. Evaluation of the Clinical Activities of the Del Amo/Montrose Clinic Contract report for the Agency for Toxic Substances and Disease Registry July, 1996
- Kuntz, D., The Politics of Suffering: The Impact of The US Embargo On The Health Of The Cuban People, (participant in a fact finding delegation) APHA, Washington, DC, Oct. 1993. reprinted in The International Journal of Health Services, 24:1, 1994, P. 161-179 and in the Journal of Public Health Policy, 15:1, 1994, P. 86-108
- Orris, P., Higgins, P. Environmental Health Evaluation of the Plum Grove Junior High School, Northwest Community Hospital, Arlington Heights, IL, August, 1994
- Orris, P. Hinkamp, D. Program Planners Manual, Occupational Health Section, APHA, April, 1986
- Orris, P. Baron, S. Occupational Medicine: A Role for the Primary Care Physician, Hospital Practice, Vol.18, No. 3, 195-202, March, 1983.
- Orris, P. (Ed.) The Salaried Physician, A Physician's Forum Monograph, Academy Prof Info Services, Inc, New York, 1982
- Orris, P. Guide to the Structure and Functioning of the American Public Health Association Soc.Caucus, American Public Health Association, 1979.

Invited/Accepted Presentations:

- Orris, P. Chemical Pollution and Health Impacts, Medical Waste & POPs Production, Mercury, Lead & Cadmium: Threat to Human Health, 2007 China NGO's Skillshare on Chemical Safety. Oct. 16-19, 2007, Beijing, China
- Orris, P. Mercury Toxicity and Health Care Use, World Medical Association, General Assembly, Copenhagen, Denmark, October 4, 2007
- Orris, P. Occupational Medicine Residency Training in the US: UIC/CCH Experience, 3rd Postgraduate Conference On Occupational Health, Cartagena, Colombia, May 27-8, 2007
- Orris, P Neurotoxicity and Safer Substitution of Mercury in Health Care, II Congreso Salud Del Trabajo, Havana, Cuba, March, 2007
- Halpin, J., Buchanan, S., Orris P., Hotel Housekeeper Injuries: Analysis of OSHA mandated Injury Log Data II Congreso Salud Del Trabajo, Havana, Cuba, March, 2007

- Orris, Peter Asbestos, Health, Environment and Justice: Cancer and the Environment, and the International Legislative Protection of Ecosystems, An International Web Conference of the International Academy of Environmental Sciences, Venice, Italy, November 23, 2006
- Orris, Peter, DDT-Malaria: When a Debate is not a Debate, 11th World Congress on Public Health/8th Brazillian Congress on Collective Health, August 23, 2006, Rio de Janeiro, Brazil
- Eric Frumin, MA, Joan Moriarty, MS, Pamela Vossen, MPH, John Halpin, MD, MPH, Peter Orris, MD, MPH, Niklas Krause, MD, PhD, MPH Laura Punnett, Sc.D., Workload-Related Musculoskeletal Disorders among Hotel Housekeepers: Employer Records Reveal a Growing National Problem, Presented to the NIOSH national NORA symposium, April, 2006
- Habib, F. Orris, P. Municipal Waste Incineration: Epidemiologic Evaluation of Hazards Utilizing Existing Health Data Bases, 12th International Symposium of the Scientific Committee on Epidemiology, International Commission on Occupational Health, Zimbabwe, Sept. 17, 1997
- Orris, P. Occupational Health and Managed Care, Amer Pub Hlth Assoc, Oct. 30, 1995, San Diego, CA
- Orris, P. Hartman, D. Strauss, P. Collins, J. Knopp, C. Xu, Y. Anderson, R. Psychological Effects of the Working Conditions of Package Truck Drivers, New Epidemics in Occupational Medicine Conf, WHO, Helsinki, Finland, May, 1994
- P., Orris, P. Providing Occupational Health Services to Small Industry: A Community Hospital Model, XXIV Internat'l Congress On Occup Health, Sept. 1993, Nice, France.
- Ugolini, C. Watkins Higgins, J. Hessel, S.M. Coe, J. Grammar, L. and Orris, P. Chronic Hypersensitivity Pneumonitis Caused by Diphenylmethane Diisocyanate Followed by Acute Hypersensitivity Pneumonitis After Exposure To A Toluene Diisocyanate Alkyd Paint, American Thoracic Society Meeting, May 18, 1992, Miami, Florida.
- Orris, P., Kahn, G., Melius, J., Rinsky, R. Mortality Study of Chicago Fire Fighters, Eighth Internat'l Symposium on Epidemiology in Occupational Health, Paris, Sept. 10, 1991
- Owi, E. , Orris, P. An Initial Look at a Group of Patients with Reversible Bronchospasm, a poster at the XXIII Internat'l Cong On Occupational Health, Sept. 1990, Montreal, Canada.
- Baron, S., Hryhorczuk, D. Orris, P., Hessel, S., Siegesmund, K., Funahashi, A., Fitzpatrick, J. Energy-Dispersive X-ray Anal. of Transbronchial Biopsy Specimens In The Diagnosis of Silicosis at the XXII Internat'l Cong On Occupational Health, Sept. 1987, Sydney, Australia.
- Orris, P., Hryhorczuk, D., Kominsky, J.R., Melius, J. Exposure to Polychlorinated Biphenyls From An Overheated Transformer, 5th Int'l Symp on Chlorinated Dioxins and Related Compounds, Sept. 17, 1985, Bayreuth, Germany.
- Hryhorczuk, D., Orris, P., Burton, W., Melius, J., Kominsky, J.R., Exposure to Polychlorinated Dibenzofurans From A PCB Transformer Fire, at the 5th Int'l Symp on Chlorinated Dioxins and Related Compounds, Sept. 17, 1985, Germany
- Orris, P., Matticks, R. X-ray and Pulmonary Function Alterations in Patients with Simple Silicosis: A Case Series, presented at the 2nd International Research Colloquium on Occupational Health: Pulmonary Disease, March 20, 1984
- Orris, P., Kominsky, J. Firefighter Exposure to Polychlorinated Biphenyls At A Transformer Overheat, American Public Health Association Convention, Anaheim, California, November 14, 1984
- Saxena, K., Johnson, P., Hryhorczuk, D., and Orris, P. Initial Medical Management of a Mini-Disaster with a Transformer Fire Emitting PCBs 3rd World Congress on Emergency and Disaster Medicine, Rome, Italy, May 25, 1983
- Orris, P. Hryhorczuk, D. Diagnosis of TCDD Intoxication, APHA, Occupational Health Section Midwest Regional Meeting, June, 2, 1983
- Orris, P. Socioeconomic Determinants of Adult Disease, National Medical Association Conv, August 1, 1983

- Hogan, M.M., Smith, R.F., Orris, P., The Integration of Occupational Medical Services Within The Internal Medicine Department of A Tertiary Care Public Hospital, American Public Health Association Convention, Dallas, Texas, November 14, 1983
- Orris, P. The Cook County Hospital Occupational Medicine Clinic NIOSH Conference on Occupational Health and Safety of Minority Workers, July 8, 1981
- Orris, P., Kahn, H.S., Sayres, B.B., Physician's Forum Task Force Report: The Salaried Physician American Pub. Health Assoc. Convention, November 3, 1981
- Orris, P., Kennedy, M.J. Guerriero, J. Hessel, S.M. Hryhorczuk, D.O. and Hoffman, D. Activities of An Employer Independent Occupational Medicine Clinic APHA Conv, Nov. 4, 1981
- Orris, P. Occupational Medicine in a Public General Hospital APHA Convention, October, 1979
- Kientz, R., Orris, P. The Economic Feasibility of a National Health Service American Public Health Assoc Conv, October, 1976
- Orris, P., Sheaf, L., Boyd, D., Freeland, J., & Zydlow, S. Mobile Intensive Care Units, Costs, and Effectiveness: An Assessment of Two Pilot Projects in Illinois APHA Conv, Oct, 1975
- Orris, P., Carlson, C., & Conibear, S. Occupational Health Education of Industrial Workers: A New Approach American Public Health Association Annual Convention, October, 1975

TEACHING:**Medical School Courses**

2007-	Co-Direct, Ethical Issues in Clinical Research, Northwestern U. Feinberg School of Medicine,
1998-	Co-Direct, <u>Environmental & Occupational Health</u> , one quarter course for MD & MPH Students, Northwestern U. School of Medicine
2002-3	<u>International Comparison of Health Care Systems</u> , on one quarter elective seminar, Northwestern U. School of Medicine
1996,7	<u>Occupational Medical Practice Seminar</u> , Rush Medical College
1981-94	<u>Occupational Health Practice</u> , one quarter elective seminar, Northwestern University Medical School
1980-93	<u>International Comparison of Health Care Systems</u> , one quarter elective seminar, Northwestern U. Medical School
1979,80, 91	<u>Cuban Health Care System Research Seminar</u> , ten day field study course, Amer Medical Student Assoc.
1978	<u>International Health Care Systems</u> , U of Illinois School of Medicine
1977	<u>The Epidemiology of Cardiovascular Disease</u> , UIC Sch. of Medicine.

Industrial Hygienists, Nurses, & Physicians

2004	Environmental Health and Nursing, CEI Course 1006.0, APHA 132 Annual Meeting, Washington, DC. November 6, 2004
2003	Lecture, Ethics of Occupational Medical Practice, Institute of Occupational Medicine, Ukrainian Academy of Sciences, Kiev, Dec. 9, 2003
2003	Lecture, <u>Privacy and Confidentiality</u> , at Ethics of Human Research Conference, Sofia, Bulgaria June 3, 2003
2003	Lectures, <u>Toxicity of Medical Waste</u> , for Kerala State Pollution Control Board, Thiruvananthapuram, India, February 21 & 22, 2003 to: State Level Meeting for Heads of Offices & Staff of Head Office

- Senior Doctors and Officers under DME and DHS
- 2003 Lecture, Medical Waste Management, Sree Chitra Trunal Institute for Medical Sciences and Technology, Thiruvananthapuram, India, February 21, 2003
- 2002 Lecture, Hospitals and the Environment: Global Trends, Plenary, Philippine Hospital Association, Manila, November 28, 2002
- 2002 Lecture, Toxicity of Medical Waste, National Seminar, Philippine Department of Health, Manila, Nov. 28, 2002
- 2002 Lecture, Toxicity of Medical Waste and Non Incineration Alternatives For Disposal, Private Hospitals Association of the Philippines, Manila, November 27, 2002
- 2002 Lectures, Toxicity of Polychlorinated Biphenyls, Dioxins, and Related Compounds, Grand Rounds, New Liskeard and Kirkland Lake Medical and Nursing Staffs, Ontario Canada,
- 2002 Lecture, Seminario El Hospital Ambientalmente Saludable, Direcccion General De Salude Ambiental, Federal Government, Mexico City, DF
- 2001 Delegates Technical Briefing, Toxicity of Medical Waste, World Health Assembly, Geneva Switzerland,
- 2001 Lecture, Medical Waste and Human Health, 2nd Biennial National Conference on Health Issues in the Arab American Community, May, 2001, Dearborn Michigan
- 2000 Lecture, Medical Waste: Dioxins and Health Effects, 9th International Congress, World Federation of Public Health Associations, Beijing China, Sept. 4, 2000
- 2000 Lecture, Medical Waste Toxicity, Dept. of Anesthesiology, Peking University Medical College, Beijing China
- 2000 Lecture, Medical Waste Toxicity, Universidad De Ciencias Empresariales Y Sociales, Buenos Aires, Argentina
- 2000 Co-Direct and Lectures on Medical Research Ethics, Collaborative Seminar with the Institute for Occupational Hygiene, Russian Academy of Sciences, Moscow
- 2000 Co-Direct and Lectures on Medical Waste Toxicity, Seminar on Medical Waste, sponsored by the Institute of Occupational Health, Ministry of Public Health, Havana, Cuba as part of the Carribbean Medical Society Meeting
- 2000- Lectures, Research Ethics, Cook Cnty Bureau of Health Services
- 1999 Lecture on Medical Waste to the Delegates of the Third Intergovernmental Negotiations for a Treaty to Eliminate or Reduce Persistant Organic Pollutants. Geneva, Switzerland.
- 1999 Lectures, Toxicity of Medical Waste, University of Nairobi, University of Toronto
- 1998 Director, Occupational Disease Course, UIC School of Public Health
- 1997 Toxicity of Persistent Pollutants, World Federation of Public Health Associations Triennial Conference, Arusha, Tanzania
- 1995-7 Annual lecture, Health Administration Program of Rush Medical School
- 1993- Annual lectures in Occupational Epidemiology Course, UIC Sch. of

1990-99 Pub. Health
Co Director Occupational Health Weekly Seminar, University of Illinois
1990- Regular lectures on Occ Health, Env Toxins, Global Warming, and
Epidemiology in several courses, UIC Sch. of Pub. Health

Residents

1980- Occasional Grand Rounds or formal departmental lectures at Cook
County Hospital, Rush Medical College, Northwestern University
Medical School, University of Chicago, Loyola University, Michael
Reese Hospital, Mt. Sinai Hospital, University of Illinois, St. Louis
University Medical School, SUNY Binghamton and Stony Brook,
Mayo Clinic Medical School, Medical College of Wisconsin, University
of Wisconsin, University of Tennessee, Illinois Masonic Hospital,
Baystate Medical Center/University of Massachusetts. Wayne State
University etc.
1979-2007 Several months a year general medicine ward attending, Cook
County Hospital
1979- Regular weekly rotation supervising the Occupational Medicine
consultation service, Cook County Hospital
1979- Weekly lectures on occupational and internal medicine topics, Cook
County Hospital

Continuing Medical Education

2005 Central States AOMA, Medical Waste Incineration: Point Counter Point
2004 Rush University, Department of Medicine Grand Rounds, "Malaria Control
and DDT Toxicity: A Public Health Delima" Mar. 26, 2004
2004 Midwest Clinical Conference, "Fish Consumption: Advise for the General
Internist", Mar. 25, 2004
2004 Grand Rounds, Evanston Northwestern Hospital, "Mercury Implications for
Office Practice", Mar 5, 2004
2004 Mercury, Low Dose Effects, Medical Directors Club of Chicago,
Mar 4, 2004
2003 Lecture, Ethics of Occupational Medical Practice: International Codes
Institute for Occupational Medicine, Ukrainian Academy of
Sciences, Kiev, December 9,
2003 Research Ethics of Special Populations at Ethical Issues in Health
Research Workshop, June 3-6, Sofia, Bulgaria
2000 Lecture, Persistent Organic Pollutants, Orlando County Medical Society
and Florida Physicians for Social Responsibility, Orlando, Fl
2000 The Physician's Role Under The Americans With Disabilities Act, Midwest
Clinical Conference of the Chicago Medical Society
1999- Monthly Departmental Lectures on Research Ethics at Cook County
Hospital and the Cook County Bureau of Health Services
1999- Lecture Series on Occupational and Environmental Health, Roseland
Community Hospital
1998 Lecture Series on Occupational Medicine, Holy Cross Hospital

1998 Clinical Management of Toxic Exposures, Michigan State University Kalamazoo Center for Medical Studies, Oct. 15. Three seminars for healthcare providers and public health officials.

1995,6 Rendering a Medical Opinion in a Legal Case, One day seminar at The American College Of Occupational and Environmental Medicine

1994 Clinical Aspects of Environmental Exposures, Bloomington Hospital, Bloomington, IN, ATSDR, US Public Health Service

1990-2 The Physician and the Law, UIC School of Public Health

1991-2 Occupational Medicine for the Primary Care Physician, UIC Sch of Public Health

1992 Epidemiology for Non-Epidemiologists, Applied Statistics Training Institute, National Center For Health Statistics, CDC, USPHS

1992 Worksite Evaluation & Pre-Placement Screening Schwab Rehab Inst

1983- Meet the Professor Sessions (nearly annually), to review the Self Assessment Examination at The American College Of Occupational and Environmental Medicine

Testimony and Briefings For Government Or Elected Officials:

2005 Medical Waste Toxicity: Status of Knowledge of Dioxins and Mercury United Nations Development Program/Global Environmental Facility Health Care Waste Project, PDFB Inception Meeting, Dakar, Senegal

2003 Briefing, US Congress, Chemical Security

2000 Briefing, US Congress, Great Lakes Congressional Staff, POPS and the Great Lakes- Issues for the POPS Negotiations

1998 Testimony, Illinois Legislature, Labor Committee, Physician Unionization

1999 Briefing, US Department of the Interior, Update on POPS and Human Health

1999 Briefing, US State Department Staff, Scientific Issues of the POPS Negotiations

PAST EMPLOYMENT AND POSITIONS

1995-07 Rush-Cook County Affiliation Research Committee (Chair, 1996)

1979-2007 Senior Attending Physician, Div. of Occupational Medicine, Cook County Hospital (Stroger Hospital)

2005-6 International Ad Hoc Reviewer, 11th World Congress on Public Health/8th Brazillian Congress on Collective Health, Rio de Janeiro, Brazil

2003 President, Wood Street Branch, Chicago Medical Society, AMA

2001-5 President, Medical Staff, Cook County Hospital

2002- 4 Member, International Planning Committee, 10th WFPHA International Congress April 19 - 22, 2004, Brighton, England

2004 Consultant, National Academy of Science's Board on Global Health, Malaria Control: A Reconsideration of the Role of DDT, Washington, DC, July 21-22, 2004

2003 Advisor, World Health Organization at the Workshop in Preparation of a GEF-Funded Global Medical Waste Project, New

Delhi, India, February 17-19, 2003

1999-01 Scientific Program Committee, Global Conference on Childrens
Environmental Health, HHS/EPA/Health Canada/Env. Canada

1998-02 Cleaner Technologies Substitutes Assessment: Professional Fabricare
Processes Technical Peer Review Panel, USEPA (EPA 744-B-98-001)

1992-00 Director, Health Hazard Evaluation Program,
University of Illinois Sch. of Public Hlth & Illinois Dept. of Public Hlth

1990-9 Director, Research & Interdisciplinary Projects,
Great Lakes Center for Occupational and Environmental Health and
Safety, University of Illinois School of Public Health,

1993-9 Medical Director, Corporate Health Services, Northwest Community
Healthcare

1990-9 Internal Medicine, U. of I. Hosp & Medical Center (attending)

1993-6 Associate Professor of Medicine, University of Illinois at Chicago
School of Medicine

1983-97 Internal Medicine, Mercy Hosp & Medical Center (consultant)

1984-93 Medical Director, Managed Care Occupational Health Program,
Chicago, Illinois

1980-86 Medical Officer, Region V, Nat'l Institute For Occupational
Safety & Health, U.S.PHS, Chicago, Illinois

1980-88 Attending Physician, Division of General Medicine, Cook Cty Hospital

1979-80 Medical Director, Southeast Health Plan, Chicago, Illinois

1979-80 Attending Physician, Div. of Emergency Medicine, Cook Cty Hospital

1972-75 Research Assist, Div. of Emergency Medical Svcs, IL Dept. of Health

1971-72 Nurse Technician, Trauma Unit, Cook County Hospital, Chicago, IL

1970 Administrative Intern, Hill Health Center, New Haven, Connecticut

1967-68 Research Assist to Dr. J. Hobson, Harvard Med School, Boston, MA

1966-67 Research Assist to Dr. David T. Denhardt, Harvard U, Cambridge, MA

PAST APPOINTED OR ELECTED POSITIONS

2001-6 Member, Technical Committee on Epidemiology and Air Quality
Monitoring (TCEAQM), Department of Health, Republic of South
Africa

2004-6 Member, State of Illinois Panel on Health of Hispanic Workers

1992-2005 Global Health Task Force Occupational Health Advisory Com.
American Medical Student Association

2002-7 Chair, Public Health Committee, Chicago Medical Society

2004-6 Board Member, Physicians for Responsible Negotiations, SEIU

1997-03 Member, Government Affairs Committee, IL State Medical Society

1993-01 Internal Medicine, Northwest Community Hospital (consultant)

2000-1 President, Wood Street Branch, Chicago Medical Society

1999-01 Secretary, Medical Staff, Cook County Hospital

1998-9 Vice President, Medical Staff, Cook County Hospital

1998-0 Scientific Committee, World Federation of Public Health Associations'
9th International Congress, Beijing, China

1997-8 Chair, Ad Hoc Committee on Physician Unionization, Chicago Medical Soc

1995-8 Clinical Advisory Committee, Del Amo Occupational Health Clinic, University of California, Irvine

1996-7 President, Wood Street Branch, Chicago Medical Society

1987-97 Executive Medical Staff, Cook County Hospital

1992-6 Executive Board, Assoc. of Occupational and Environmental Clinics (President 1994-5)

1983-1996 Self Assessment Committee, American College of Occupational and Environmental Medicine

1996 Consultant, United States Peace Corps

1993-5 Task Force on Environmental Health, University of Toronto &

1995 Advisor, Office of Global & Integrated Environmental Health, World Health Organization, Geneva, Switzerland

1994 Advisor, Occupational Health Program, World Health Organization, Moscow, Russian Republic

1994 Occupational Medical Advisor, Health and Safety Com., Local 974, United Automobile Workers Union, AFL-CIO, Peoria, Illinois

1992-3 Consultant, US/Canada International Joint Commission on boundary Waters and the Ecosystem of the Great Lakes

1992-3 Nominating Committee, Amer Public Health Association, (Chair-1993)

1991-2 Governing Council, American Public Health Association

1991-2 Ad Hoc Task Force on Expert Witness Testimony, Chicago Med. Soc.

1990-2 Alternate Councilor, Chicago Medical Society

1990-1 Consultant, SOYUZMEDINFORM, Ministry of Health, USSR

1989 Consultant, United Steelworkers of America, AFL-CIO, Local 1010,

1988-92 Atomic Radiation and Dioxin Poisoning Victims Advisory Council, State of Illinois

1988-90 AIDS Proj Adv Bd, Service Employees International Union, AFL-CIO

1987-89 Nat'l Sanitation Foundation Drinking Water Additives Health Effects Task Group

1987-9 Health Advisory Committee, National Safety Council, for the Am Occupational Medical Assoc

1987-8 Consultant, United Association of Journeymen & Apprentices of the Plumbing & Pipe Fitting Industry of the U S and Canada, AFL & CIO

1986-9 Executive Board, Nat'l Union of Hospital & Health Care Employees/1199, AFL-CIO

1986-8 Governing Council, American Public Health Association

1986-7 Consultant, Local 75, United Assoc of Journeymen & Apprentices of the Plumbing & Pipe Fitting Industry of US & Canada AFL/CIO

1985-7 Advisory Committee, Health Policy Agenda for the American People for the APHA

1985-8 Advisory Committee, Hospital Occupational Safety and Health Program, American Hospital Association

1984-5 Chairman, Program Committee, Occupational Health Section, APHA

1984-7 Research Committee, Dept. of Medicine, Cook County Hospital

1982-4 Action Board, American Public Health Association

1982-4 Joint Policy Committee, American Public Health Association,

1979-82	Program Committee, Medical Care Section, APHA
1978-86	Occupational Health Committee, Cook County Hospital
1978-80	Resolutions Committee, Illinois Public Health Association
1977-80	Com. on Nat'l Health Proposals, Med Care Sect, APHA
1976-9	Chairman, National Health Insurance/Service Com, The Physicians National House staff Association
1975-9	Executive Medical Staff, Cook County Hospital
1972-5	Chicago Area Committee on Occupational Safety and Health

ANALYTICAL MICROBIOLOGY LABORATORY
ANNUAL LOG OF SAMPLES AND ANALYSES RESULTS - 2006

Electronic Filing - Received, Clerk's Office, June 25, 2008

Exhibit A
Attachment 2

Waterway	Sample Point	Lims Number	Sample Date	FC cfu /100mL	EC mTEC /100mL
North Shore Channel	Central St.	4972365	8/14/2006	50	50
North Shore Channel	Oakton St.	4835639	2/14/2006	2,300	2,900
North Shore Channel	Oakton St.	4972366	8/14/2006	90	110
North Shore Channel	Touhy Ave.	4835643	2/14/2006	7,500	5,900
North Shore Channel	Touhy Ave.	4899404	5/8/2006	5,400	2,100
North Shore Channel	Touhy Ave.	4972367	8/14/2006	22,000	14,000
North Shore Channel	Foster Ave.	4835650	2/14/2006	3,500	3,400
North Shore Channel	Foster Ave.	4899407	5/8/2006	5,500	3,700
North Shore Channel	Foster Ave.	4972377	8/14/2006	30,000	23,000
North Branch Chicago River	Wilson Ave.	4835627	2/14/2006	3,800	4,700
North Branch Chicago River	Wilson Ave.	4899398	5/8/2006	2,400	4,000
North Branch Chicago River	Wilson Ave.	4972350	8/14/2006	20,000	12,000
North Branch Chicago River	Diversey Pkwy.	4835633	2/14/2006	1,600	1,900
North Branch Chicago River	Diversey Pkwy.	4899400	5/8/2006	1,200	2,100
North Branch Chicago River	Diversey Pkwy.	4972352	8/14/2006	7,600	7,800
North Branch Chicago River	Grand Ave.	4835634	2/14/2006	1,100	1,200
North Branch Chicago River	Grand Ave.	4899401	5/8/2006	290	340
North Branch Chicago River	Grand Ave.	4972360	8/14/2006	2,600	1,400
Chicago River	Lake Shore Drive	4815569	1/17/2006	60	90
Chicago River	Lake Shore Drive	4883507	4/17/2006	20	<10
Chicago River	Lake Shore Drive	4950737	7/17/2006	40	<10
Chicago River	Lake Shore Drive	5021309	10/16/2006	<10	<10
Chicago River	Wells St.	4815570	1/17/2006	2,000	1,600
Chicago River	Wells St.	4883508	4/17/2006	1,100	1,200
Chicago River	Wells St.	5021310	10/16/2006	30	30
South Branch Chicago River	Madison St.	4815571	1/17/2006	2,900	2,000
South Branch Chicago River	Madison St.	4883510	4/17/2006	43,000	28,000
South Branch Chicago River	Madison St.	4950739	7/17/2006	240	220
South Branch Chicago River	Madison St.	5021311	10/16/2006	140	200
South Branch Chicago River	Loomis St.	4815572	1/17/2006	6,400	6,300
South Branch Chicago River	Loomis St.	4883511	4/17/2006	760	680
South Branch Chicago River	Loomis St.	4950758	7/17/2006	230	150
South Branch Chicago River	Loomis St.	5021315	10/16/2006	110	200
Bubbly Creek	Archer Ave.	4815574	1/17/2006	1,200	1,300
Bubbly Creek	Archer Ave.	4950762	7/17/2006	90	230
Bubbly Creek	Archer Ave.	5021317	10/16/2006	240	300



Metropolitan Water Reclamation District of Greater Chicago

Transmittal Letter For Board Meeting

June 4, 2004

(For Board Meeting of June 17, 2004)

COMMITTEE ON RESEARCH AND DEVELOPMENTMr. John C. Farnan
General Superintendent
O F F I C E**AGENDA SUMMARY:** Report on the Use Attainability Analysis (UAA)
Study for the Chicago Area Waterways (CAWs)

Dear Sir:

We wish to report on the progress of the UAA Study being conducted by the Illinois Environmental Protection Agency (IEPA), which began at a kick-off meeting of stakeholders in September 2002. This study is required by the Clean Water Act and relevant regulations because those portions of the CAWs that are designated by the Illinois Pollution Control Board (IPCB) as Secondary Contact and Indigenous Aquatic Species (Secondary Contact) waters do not meet the goals of the Clean Water Act. At 33 USC Section 1251(a)(2) it states: "Wherever attainable, water quality provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water." The current Secondary Contact use designation is not intended for body contact recreation (swimming) or for the protection and reproduction of aquatic life species native to the area. It was designated by the IPCB in the early 1970s for those man-made and modified waterways in which flow is dominated by treated municipal effluents. For these reasons, Secondary Contact waters do not meet the goals of the Clean Water Act.

To perform this study, the IEPA required the services of a qualified consultant and selected Camp, Dresser and McKee (CDM) at a fee of \$571,000 for a term beginning January 2003 and ending December 2004. Most of this funding is provided by Region V. In addition, the IEPA formed a Stakeholders Advisory Committee (SAC) to help guide the study. The SAC consists of representatives of environmental groups, federal, state and local governments and industry. The first meeting of the SAC was held in April 2003 and a total of nine meetings

Mr. John C. Farnan
General Superintendent

5
(For Board Meeting of June 17, 2004)

June 4, 2004

SUBJECT: Report on the Use Attainability Analysis (UAA)
Study for the Chicago Area Waterways (CAWs)

largest use overall, varying from 96 percent on the Chicago River to zero on the Grand Calumet River and Lake Calumet. Fishing was the next most popular activity. Swimming was not observed in any of the waterways. Canoeing and kayaking were popular on the North Shore Channel and North Branch, but not in other waterway segments.

As explained earlier, the Secondary Contact designation does not include standards that provide for reproduction of aquatic life and primary contact recreation (swimming).

Based on the assessment of water quality data, biological conditions and physical habitat by CDM and reviewed by the SAC, the IEPA has proposed three aquatic life use classes shown on Attachment 1. Further, based on federal bacterial criteria, the IEPA has proposed three recreational use classes, also shown on Attachment 1.

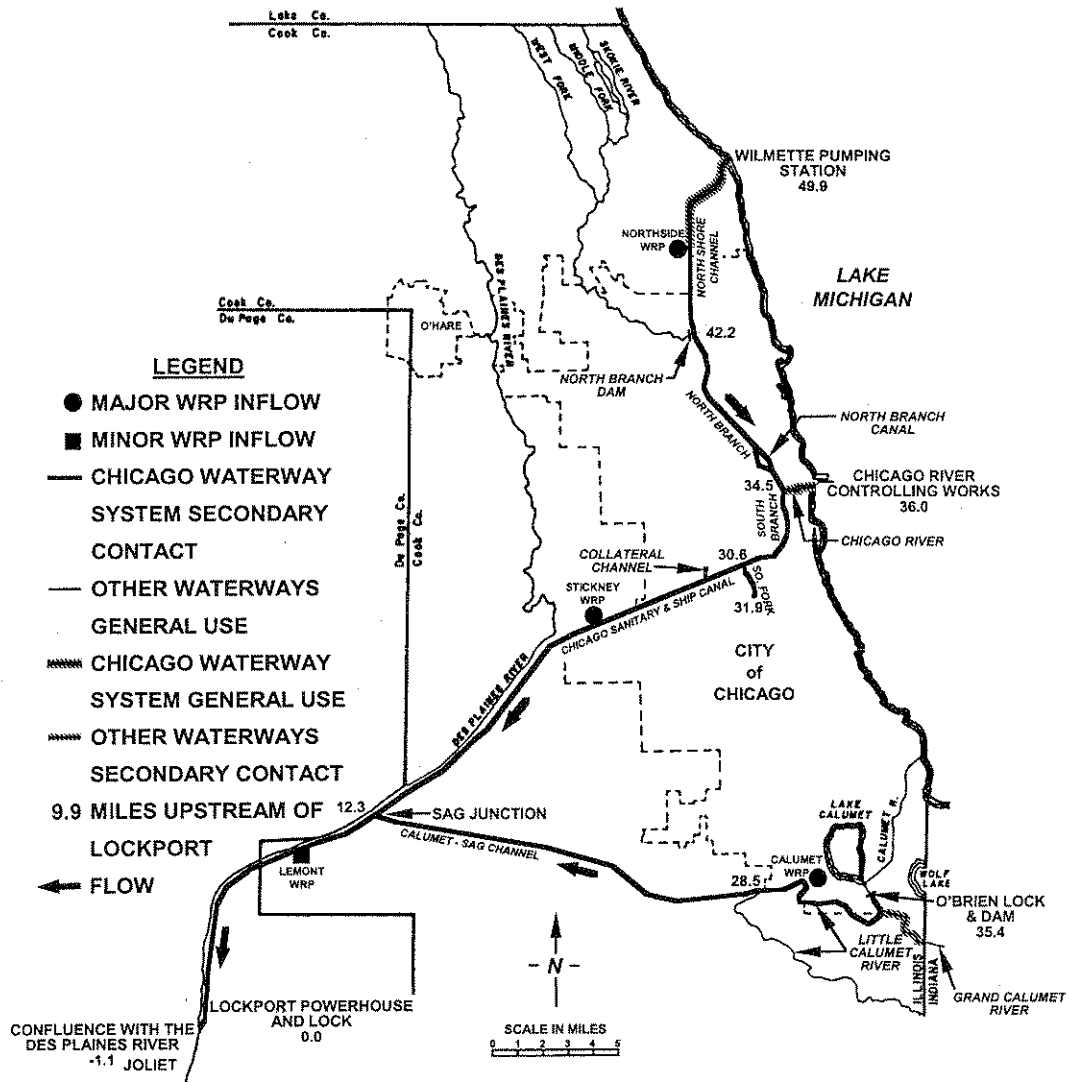
Based upon a review of water quality data, biological conditions and physical habitat characteristics, the SAC has determined that the proposed Modified Warm-Water Aquatic Life use would be appropriate for most of the waterways. The Limited Warm-Water Aquatic Life use would be appropriate for the Chicago River, Chicago Sanitary and Ship Canal, Lower North Branch, South Branch and South Fork (Bubbly Creek). Based upon a review of current recreational use of the CAWs, the SAC has determined that the proposed Limited Contact Recreational use would be appropriate for all of the waterways, except for the Chicago Sanitary and Ship Canal. The proposed Recreation Navigation use would be appropriate for the Chicago Sanitary and Ship Canal.

To achieve these proposed uses it will be necessary to address some of the known deficiencies in water quality. The technologies necessary will include disinfection, flow augmentation, supplemental aeration and combined sewer overflow treatment. On March 12, 2004, the IEPA requested the District to use the recently developed water quality model to analyze needed improvements and to conduct engineering investigations of the feasibility and cost of technologies to address the observed water quality deficiencies. On May 21,

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

FIGURE 1

CHICAGO WATERWAY SYSTEM



4/10/03

20 April 2004

ATTACHMENT 1

3rd DRAFT

Chicago Area Waterway System Standards - The following standards protect the beneficial uses of the waters in the open channels that flow through the Chicago metropolitan area. They include the following waterbodies:

1. North Shore Channel from Lake Michigan to the confluence with the North Branch of the Chicago River
2. North Branch of the Chicago River from its confluence with the North Shore Channel to its confluence with the South Branch, including the North Branch Canal
3. The Chicago River
4. The South Branch of the Chicago River, including the South Fork and navigation slips
5. The Chicago Sanitary Ship Canal, including the Collateral Channel
6. Lake Calumet and Lake Calumet Entrance Channel
7. The Calumet River from Lake Michigan to the confluence with the Grand Calumet River
8. The Grand Calumet River
9. The Little Calumet River from its junction with the Grand Calumet River to the Calumet-Sag Channel
10. The Calumet-Sag Channel

Beneficial uses and the applicable sections of the 35IL Adm Code Part 302 include the following:

Aquatic Life Use Designations :

- *General Warm-water Aquatic Life* - These waters are capable of supporting a year-round balanced, diverse warm-water fish and macroinvertebrate community. The fish community is characterized by the presence of a significant proportion of native species, including mimic shiner, spotfin shiner, brook stickleback, longnose dace, hornyhead chub, smallmouth buffalo, rock bass and smallmouth bass. The attributes of species composition, diversity and functional organization will be measured using the Index of Biotic Integrity (IBI)¹. The biological integrity of these waters are typically reflected by IBI scores ranging between 29 and 45. Water quality standards as identified in 35IL Adm Code Part 302, Subpart B: Sections 302.201 – 302.213 or more appropriate standards based upon recent guidance shall be applied to protect the General Warm-water Aquatic Life use designation.
- *Modified Warm-water Aquatic Life* - These water are presently incapable of supporting and maintaining a balanced, integrated, adaptive community of a warm-water fish and macroinvertebrate

20 April 2004

ATTACHMENT 1

community due to significant modifications of the channel morphology, hydrology and physical habitat that may be recoverable. These waters are capable of supporting and maintaining communities of native fish and macroinvertebrates that are moderately tolerant, and may include desired sport fish species such as channel catfish, largemouth bass, bluegill, and black crappie. The attributes of species composition, diversity and functional organization will be measured using the Index of Biotic Integrity (IBI)¹. The biological integrity of these waters are typically reflected by IBI scores between 22 and 28. Water quality standards as identified in 35IL Adm Code Part 302, Subpart B: Sections 302.201 – 302.213 or more appropriate standards based upon recent guidance shall be applied to protect the Modified Warm-water Aquatic Life use designation.

- *Limited Warm-water Aquatic Life* - These surface waters are not presently capable of sustaining a balanced and diverse warm-water fish and macroinvertebrate community due to irreversible modifications that result in poor physical habitat and stream hydrology. Such physical modifications are of long-duration (i.e. twenty years or longer) and may include artificially constructed channels consisting of vertical sheet-pile, concrete and rip-rap walls designed to support commercial navigation and the conveyance of stormwater and wastewater. Hydrological modifications include locks and dams that artificially control water discharges and levels. The fish community is comprised of tolerant species, including common carp, central mudminnow, golden shiner, white sucker, bluntnose minnow, yellow bullhead and green sunfish. These waters shall allow for fish passage. The attributes of species composition, diversity and functional organization can be measured by the Index of Biotic Integrity (IBI)¹. The biological integrity scores for these waters typically range from 12 to 21. Water quality standards as identified in 35IL Adm Code Part 302, Subpart B: Sections 302.201 – 302.213 or more appropriate standards based upon recent guidance or habitat limitations shall be applied to protect the Limited Warm-water Aquatic Life use designation. On a case-by-case basis, General Use water quality criteria may be modified to protect the existing aquatic life use designation.

Recreational Use Designations :

- *Whole-Body Contact Recreation* - Protects for routine, prolonged and intimate contact uses including swimming and water-skiing. Protection would require attainment of a geometric mean of 126 cfu *E. coli* standard² and a daily maximum of 576 cfu *E. coli* standard based on 8 illness per thousand contact. These whole-body contact

20 April 2004

ATTACHMENT 1

recreation criteria shall apply only during the defined recreational period of May 1 through October 31.

- *Limited Contact Recreation*- Protects for incidental or accidental body contact, which the probability of ingesting appreciable quantities of water is minimal, recreational boating (kayaking, canoeing, jet skiing), and any limited contact incident to shoreline activity, such as wading and fishing. Protection would require attainment of 30-day geometric mean 1030 cfu *E. coli* standard³ based on 10 illnesses per thousand contacts. These limited- body contact recreation criteria shall apply only during the defined recreational period of May 1 through October 31.

- *Recreational Navigation* - Protects for non-contact activities including, but not limited to pleasure boating and commercial boating traffic operations. Protection would require attainment of a 30-day geometric mean 2740 cfu *E. coli* standard⁴ is based on 14 illnesses per thousand contacts. These limited-body contact recreation criteria shall apply only during the defined recreational period of May 1 through October 31.

Footnotes

¹ The Index of Biological Integrity (IBI) shall be calculated using an IBI approach approved by IEPA.

² *E. coli* standard of 126 per 100 ml (either MPN or MF) is based upon a thirty-day geometric mean. Compliance shall be based on the geometric mean of all individual samples taken during four or more sampling events representatively spread over a thirty-day period. A daily maximum of 576 cfu *E. coli* would also be appropriate. These numeric values are based on 8 illnesses per thousand contact.

³ *E. coli* standard 1000 per ml (MPN or MF) is based upon the thirty-day geometric mean of four or more sampling events representatively spread over a thirty-day period.

⁴ *E. coli* standard 2750 per ml (MPN or MF) is based upon the thirty-day geometric mean of four or more sampling events representatively spread over a thirty-day period.

Metropolitan Water Reclamation District of Greater Chicago

CHICAGO AREA WATERWAYS USE ATTAINABILITY ANALYSIS STUDY

DISINFECTION STRATEGY

In response to the IEPA letter dated March 12, 2004 regarding the Chicago Area Waterways UAA Study, the District will pursue the matter of disinfection following the five tasks identified below. The key issue in this strategy is the assessment of the risk to human health relative to the designated use. If the selected designated use is non-contact recreation such as canoeing, fishing, etc., then the District will investigate whether a significant lessening of health risk is achieved by disinfecting the effluent and whether the cost of disinfection is justified for the benefit derived.

Risk Assessment of Human Health Impacts of Disinfection vs. No Disinfection

R&D will retain the services of a consultant to perform a comparative risk assessment of the human health impacts of continuing with the current practice of no disinfection vs. initiating disinfection at the three large WRPs. The risk assessment will attempt to quantify the expected reduction, if any, in the incidence of disease to the affected population that instituting disinfection would achieve. The magnitude of the reduction in health impacts, if any, will then be compared to the anticipated costs of instituting disinfection.

Preparation of RFP complete: *June 4, 2004*

RFP advertised: *June 30, 2004*

Agreement for services approved by Board: *September 9, 2004*

Agreement for services executed: *September 30, 2004*

Completion of work: *July 30, 2005*

Establish Whether or not Effluent Disinfection is Effective

R&D will perform additional monitoring for fecal coliform in the waterways in an effort to determine whether disinfection of WRP effluents alone, will significantly reduce fecal coliform levels in the waterways, and provide a meaningful increase in human health protection. R&D will also include fecal coliform modeling in the next phase of water quality model development by Marquette University to better analyze the impact of various sources of bacterial material on ambient levels of fecal coliform in the Chicago Area Waterways.

Additional monitoring begun April 2004

Data analysis during *first quarter 2005*

Waterway model analysis *second quarter 2005*

Additional monitoring may continue in *2005*

Evaluate the USEPA Bacterial Guidance

R&D will retain the services of one or more outside experts to examine the science underlying the USEPA November 2003 draft guidance, *Implementation Guidance for Ambient Water Quality Criteria for Bacteria*, and the *1986 Ambient Water Quality Criteria for Bacteria* to determine whether the

"The guidance contains proper scientific foundation for establishing scientifically defensible and justifiable limits for primary, secondary and limited contact recreation."

ATTACHMENT 2

Preparation of RFP complete: *June 4, 2004*
RFP advertised: *June 30, 2004*
Agreement for services approved by Board: *September 9, 2004*
Agreement for services executed: *September 30, 2004*
Completion of work: *March 30, 2005*

Investigate Alternative Technologies for Disinfection and the Impacts of Disinfection Chemicals

Engineering will retain the services of an experienced consultant firm to form a committee of experts from academia and engineering to investigate all possible disinfection technologies and recommend a technology appropriate for the District's Calumet, North Side and Stickney WRPs. The investigation will review different disinfection technologies and their range of pathogen destruction ability. The investigation will also include an examination of the environmental and human health impacts of: the energy required to operate the facility; the energy required for the processing and production of process chemicals; and the conversion and degradation of process chemicals.

Request for Interviews sent to six firms: *May 7, 2004*
Request for Proposals sent: *June 30, 2004*
Proposals received: *July 30, 2004*
Agreement for services approved by Board: *October 21, 2004*
Agreement for services executed: *November 12, 2004*
Completion of work: *June 11, 2005*

Estimate the Cost of Disinfection

Engineering will retain the services of one or more engineering consultants to prepare a conceptual level design of the disinfection technology selected above, specific to the Calumet, North Side and Stickney WRPs, and prepare conceptual level cost estimates for the design, construction, operation and maintenance of the disinfection facilities.

Identification of selected technology: *June 11, 2005*
Completion of work: *December 10, 2005*

Metropolitan Water Reclamation District of Greater Chicago

CHICAGO AREA WATERWAYS USE ATTAINABILITY ANALYSIS STUDY

WATER QUALITY MANAGEMENT ALTERNATIVES STRATEGY

In response to the IEPA letter dated March 12, 2004, regarding the Chicago Area Waterways UAA Study, the District will pursue the matter of water quality management alternatives in the following manner.

Water Quality Modeling

R&D will obtain a proposal from and increase the contract with Marquette University for the additional work necessary to model the water quality conditions to address the dissolved oxygen (DO) deficiencies identified in the letter and determine load reductions needed to meet the three target DO levels specified by the IEPA.

Proposal requested: April 2, 2004.

Proposal dated April 19, 2004, received May 7, 2004.

Submitted to Board of Commissioner for approval: *June 3, 2004*

Notice to proceed: *July 31, 2004*

Simulation development complete: *November 2004*

Evaluation of alternatives complete: *May 2005*

As mentioned in the second to last paragraph of the IEPA letter, these management alternatives are limited to part of the waterway system and these alternatives, and perhaps others, may be considered for additional reaches as the UAA Study progresses. At a later time when further requests are received from IEPA, the District will pursue the matter in the following manner.

Investigate Management Alternatives to Address Water Quality Conditions

Engineering will retain the services of a consulting engineering firm to perform the following tasks:

- Using the modeling results, prepare a conceptual level design for flow augmentation in the Upper North Shore Channel using North Side plant effluent.
- Using the modeling results, prepare a conceptual design for supplemental aeration to meet the target level specified by the IEPA in each of the designated waterways.
- Investigate technologies for end-of-pipe CSO treatment in the designated waterways.

For each of the above, the consultant will prepare conceptual cost estimates for these facilities, including design costs, capital costs, and annual operation and maintenance costs. In addition, for each of the above, the consultant will prepare an examination of the environmental and human health impacts of: the energy required to operate the facility; the energy required for the processing and production of process chemicals; and the conversion and degradation of process chemicals.

Request for Interviews sent to six firms: *May 7, 2004*

Request for Proposals sent: *June 30, 2004*

Proposals received: *July 30, 2004*

Agreement for services approved by Board: *October 21, 2004*

Agreement for services executed: *November 12, 2004*

Receive modeling results: *May 2005*

Completion of work: *November 2005*

WQ-16J

Toby Frevert, Manager
Division of Water Pollution Control
Illinois Environmental Protection Agency
PO Box 19276
Springfield, Illinois 62794-9276

Dear Mr. Frevert:

Enclosed are the United States Environmental Protection Agency's (U.S. EPA) comments on the draft water quality standards for the Lower Des Plaines River and the Chicago Area Waterway System, released by the Illinois Environmental Protection Agency (IL EPA) on January 26, 2007.

U.S. EPA recognizes that IL EPA does not intend the suggested rules to be considered draft or proposed, but rather as a starting point for discussions by the Stakeholder Advisory Committee (SAC) on what should and should not be included in the final proposed rules. With this in mind, U.S. EPA's comments are intended to highlight issues that should be considered and to provide suggestions on how to address these issues. They are not meant as specific requirements that must be incorporated into IL EPA's final rules. U.S. EPA will review and provide comments, if any, when the final draft and final proposed rules are provided to U.S. EPA.

U.S. EPA looks forward to continuing to work with IL EPA and the SAC to develop comprehensive, approvable rules that will protect and improve the quality of the environment in the Lower Des Plaines River and the Chicago Area Waterway System.

Please feel free to contact me at 312-886-6758, or my Deputy Chief, Allen Melcer at 312-886-1498 or via email at melcer.allen@epa.gov if you would like to discuss this matter further.

Very truly yours,

Linda Holst, Chief
Water Quality Branch

Enclosure

bcc: Allen Melcer
Peter Swenson
Dave Pfeifer
Ed Hammer

Holly Wirick
Janet Pellegrini

C:\ACHICO_WORK\Water Quality Branch\07_Correspondence\Frevert_CAW.doc

**Region 5 Comments on IL EPA Draft Rules for
TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE C: WATER POLLUTION
PARTS 301, 302, 303 and 304
Dated January 18, 2007**

General Comments

1. When States submit draft water quality standards, information is usually included on the methodologies, data, underlying assumptions and technical justifications used in calculating the draft standards, typically submitted as the technical support document for the proposed revisions. This information is as important for our review as the revisions themselves. In our review of Illinois Environmental Protection Agency's (IL EPA) draft rules we relied on the draft Chicago Area Waterways (CAW) Use Attainability Analysis (UAA) report. In many instances, particularly where IL EPA's draft rules differ from the CAW UAA report, IL EPA has not provided sufficient technical support for the draft rules.
2. Some of the proposed revisions, particularly concerning use designations, are not in accord with recommendations made by the Stakeholders Advisory Groups (SAC). For example, the proposed aquatic life use designations of Early Life Stages Present, Early Life Stages Absent and Upper Dresden Island Pool were not discussed during SAC meetings, yet they are included in the draft rules. The same goes for the proposed recreation use titled "Non-Recreational." IL EPA has not provided the data analysis and justifications that form the basis for the new proposed use designations. We believe that further discussion is warranted on the differences between the SAC recommendations and the draft rules.
3. IL EPA did not provide an explanation of how and why new use designations were created nor a discussion of how the proposed water quality criteria will protect these uses. There is also a need for further documentation of why each reach of the CAW and lower Des Plaines River were placed into particular use categories.

Specific Comments

4. Recreational Use Designations and Bacteria Criteria
In order to support recreational use designations less protective than primary contact, a demonstration must be made that one of the six factors listed at 40 C.F.R. 131.10(g) applies to a segment(s) of the waterway. This issue was considered during the UAA process and the draft UAA report states that almost all of the CAW could not be designated for primary contact recreational use based on physical configuration of the waterway and on safety issues. However, the draft UAA report only contains general conclusions regarding this issue. Now that some comments have been submitted on the draft rules recommending that the CAW should be designated for primary contact recreational use, IL EPA should include in the UAA or elsewhere in the record

documentation demonstrating specifically how at least one of the six factors applies to each specific segment of the CAW and lower Des Plaines that is not proposed to be designated for primary contact recreational use.

5. The CAWs are currently designated for Secondary Contact use, which is defined under Illinois' current water quality standards as "any recreational or other water use in which contact with the water is either incidental or accidental and in which the probability of ingesting appreciable quantities of water is minimal, such as fishing, commercial and recreational boating and any limited contact incident to shoreline activity." Information in the draft UAA and from other sources suggests that a higher recreational use than Secondary Contact is occurring in a number of the CAWs. Specifically, the information suggests that kayaking and jet skiing—two recreational activities in which the probability of ingesting appreciable quantities of water is greater than recreational boating — occurs. The draft rules should contain use designations consistent with this information. Accurate use designation language is especially important in determining the appropriateness of bacteria criteria necessary to protect the designated use. The use designations in the draft rule do not appear to accurately reflect the attainable recreational uses.
6. Section 302.402 - Purpose
The phrase "the highest quality indigenous aquatic life and wildlife that is compatible with existing physical habitat and hydrologic conditions" is ambiguous. Please provide a more precise description of the expected condition. It is difficult to determine whether or not the proposed criteria are protective of the use without a clearer description.
7. Section 302.406 – Bacteria
The draft revisions propose not making the bacteria criterion effective until March 1, 2010. We believe that, if a criterion is necessary to protect the use, it should be effective immediately upon adoption. The State may, however, include provisions in its water quality standards or NPDES implementing regulations allowing specific NPDES permittees to seek a compliance schedule provided that such compliance schedule is consistent with 40 CFR 122.47.
8. We noted the following typographical errors in paragraphs (a) and (b): "The Incidental Contract" (replace with Contact), and; "Escherichia Coli (E. Coli) of 1030 colony forming units (cfu)." (should read cfu/100ml)
9. Section 303.225 – Non-Contact Recreation Waters
The definition for this use category includes "... pass through commercial or recreational navigation ...". Is this category also meant to include boat launching? If it is meant to include boat launching, we believe that activities involving dermal contact with the water, such as would occur in boat launching, make it more appropriate to include boat launching in the "Incidental Contact Recreation" use category and to designate any waterbody segments in which launching occurs as Incidental Contact Recreation.

Also, it is not clear from the name "Non-Contact Recreation" exactly which activities are covered in this use category. If this category only includes activities where there is no contact with the water, it should be noted that some recreational boating, especially small, high-speed boats can create spray which leads to dermal and inhalation contacts. An alternative name for this use category that describes at least minimal contact with the water should be considered.

10. In developing revised water quality standards, IL EPA should take into account that, especially during high flow, the Calumet River can discharge into Lake Michigan, potentially impacting public water supply intakes and bathing beaches in Illinois and Indiana. This information should also be taken into account when evaluating the need for water quality based effluent limitations for point source discharges that may impact these downstream public water supply intakes and bathing beaches.

11. Section 303.227 - Non-Recreational Waters

This section designates portions of the Chicago Sanitary and Ship Canal (CSSC) as non-recreational use, meaning that there are no bacteria standards for this segment. However, documentation of recreational use of this segment of the CSSC found on Pages 4-69 and 70, Draft CAW UAA, Section 4.4.1 Recreation and Navigation Uses (CSSC) states:

Observed uses on the CSSC were canoeing, kayaking, fishing and power boating. Commercial navigation was observed in areas where the USACE maintains the channel. The team also observes the following notable activities:
Chicago Youth Rowing Club and Kenwood Academy boat launches, City of Chicago student activities at Western Avenue, City of Chicago's boat launch at Western Avenue, and Friends of the Chicago River "River Rescue" events in that segment.

The documentation in the Draft UAA of low levels of pathogens measured in the CSSC (page 4-29 & -30 Draft CAW UAA) and of existing recreational usage in this segment of the waterway raises questions regarding the appropriateness of a non-recreational use designation for this segment.

Also, the non-recreational use definition of the reach segment for CSSC and its Collateral Channel begins at California Avenue and extends to the confluence with the lower Des Plaines River. However, the City built a boat launch at Western Avenue, only 4 blocks east of the start on the non-recreational use zone. Consideration should be given to the fact that the boat launch could allow boaters to enter the non-recreational segment.

12. The Village of Summit has been operating a boat launch on the CSSC since the summer of 2005. The launch is downstream of the Stickney water reclamation plant in the stream reach designated as Non-Recreational Waters in IL EPA's January 18, 2007, proposed rules. The activities involved in launching recreational boats, both motorized and non-motorized, usually involve contact with the water, including wading. These activities are inconsistent with the proposed non-recreational use designation.

13. Aquatic Life Use Designations

The Aquatic Life Use designations were discussed in detail at the CAW SAC meetings, including options for creating new use classifications. However, the aquatic life use designations contained in the proposed revisions (Early Life Stages Present, Early Life Stages Absent and Upper Dresden Island Pool) was not discussed in the SAC meetings or in the UAA reports. We have concerns regarding the appropriateness of aquatic life uses that have as their goal the absence of early life stages.

In order to allow U.S. EPA to fully assess the proposed aquatic life use designations, IL EPA should submit the basis for the proposed designations and associated water quality criteria and a description of the goals for aquatic life for each of the use designations.

14. Section 303.237 – Upper Dresden Island Pool

It is not clear from this use designation what goals and intended uses IL EPA has in mind for this segment. IL EPA should strongly consider the information generated by the stakeholder workgroup and develop clear goals to be incorporated into the rule.

Temperature Criteria

IL EPA released two proposals for temperature criteria for the CAW and lower Des Plaines River, one developed by IL EPA and the other proposed by Midwest Generation. Technical support documentation is needed in evaluating the adequacy of the proposed criteria for protecting the designated uses for the system in order to determine if either of the temperature criteria proposals would be approvable under U.S. EPA guidance.

The following comments and suggestions are provided to guide IL EPA in developing protective temperature criteria.

15. It is not clear from the proposed revisions what ecosystem goals, designated uses, and fish and macroinvertebrate assemblages IL EPA intends for the various aquatic life use classifications in the system. The approach used by IL EPA for determining protective temperature criteria, developed by the Midwest Biodiversity Institute (MBI), is technically sound and is supported by U.S. EPA. However, the success of this approach is dependent on decisions made by the regulatory agency on the designated uses for the waterbodies in question and what type and quality of ecosystem is needed to attain that use. The MBI approach allows the regulatory agency the flexibility to determine what biological endpoints and specific fish species they will protect for a given temperature regime.

Please provide the technical assumptions and justifications used to select the maximum and average temperature limits in the proposed revisions. Please include what species are being protected, what representative aquatic species (RAS) list is being used, and what biological endpoints, both lethal and sub-lethal are being protected for each time period in the year. Based on our initial review, it appears that summer temperatures in both

temperature proposals exceed the sub-lethal endpoints for many of the species and lethal endpoints for some of the species.

Please include justification for proposed temperature limits for non-summer months, including what life stages and biological endpoints are being protected during the cooler months.

16. To meet the interim goal of the Clean Water Act, U.S. EPA would expect that temperature criteria protect for growth, reproduction, and lethality endpoints necessary to protect the designated use. To be consistent with designation of a CWA 101(a) use, water quality criteria, including temperature, should provide for protection and propagation of fish, shellfish, and wildlife. To achieve protection of a propagating aquatic community, a sufficient proportion of the species assemblage should be protected to maintain ecological structure and function, as well as other important attributes of a 101(a) use (such as protection of commercially or recreationally important species). U.S. EPA considers that protective criteria for these waters would be inclusive of the following:
 - a. Biological endpoints:
 - I. Acute lethality – generally indicated by the ultimate upper incipient lethal temperature (UUILT);
 - II. Long term lethality – indicated by the chronic thermal maximum (ChTM);
 - III. Growth – often indicated by the Mean Weekly Average Temperature (MWAT);
 - IV. Reproduction – allowance for successful migration, spawning, egg incubation, fry rearing, and other reproductive functions.
(In addition, Upper Avoidance Temperature and Final Preferendum Temperature may also be important considerations for the aquatic life community. For many assemblages/species, the avoidance temperature as an endpoint becomes one of paramount importance. If a species survives because it avoids an area of high temperature, though not lethal, the area will become an ecologically deserted area. It can also preclude the use of an area as a transit or migratory route used by species.)
 - b. Species Assemblage
 - I. Threatened or endangered species;
 - II. Ecologically important species – those species that fill a critical niche in the ecosystem;
 - III. Commercially or recreationally important species; and
 - IV. The majority of other expected species as defined by the designated use.

For waters designated as something less than general use for aquatic life, temperature criteria may be selected that protect fewer biological endpoints or a lesser number of species; however, technical support must be supplied to justify this lower level of protection. We suggest you refer to EPA's QUALITY CRITERIA for WATER 1986,

EPA 440/5-86-001 (also known as the “Gold Book”) for additional guidance on developing temperature criteria.

To complete the criteria derivation process using the MBI methodology, IL EPA needs to review the RAS lists that were developed by MBI for the lower Des Plaines and create a similar list for the CAW of use-protected fish species consisting of the species assemblages that are currently present in the waterways and the species assemblage that ought to be present in the different segments of the CAWs in the absence of thermal impacts (this step accounts for limitations on habitat due to the nature of the system, contaminated sediments and hydrological modifications).

From the use-protected list, IL EPA should then identify which species, if any, are designated as threatened or endangered. These species should be fully protected for both lethal and sub-lethal endpoints. From the remaining species on the use-protected list, IL EPA would then identify those species that it wants to maintain in the various stream segments as commercially or recreationally important and those that are critical for maintaining the ecosystem. Next, to the extent data are available, identify the different thermal endpoints for the expected species and describe, to the maximum extent possible given the data, the thermal regime that would be necessary to prevent any impact to expected aquatic community.

The next step is to identify the proposed aquatic life designated uses and current existing uses from the draft UAA report and then assign species from the use-protected list to each use. Finally, evaluate whether or not the criteria needed to support a community without thermal impacts are attainable for reasons of human caused conditions that influence the thermal regime that cannot be remedied (high winter temperatures of POTW effluent, thermal component of stormwater, etc.).

17. The proposed temperature criteria during the summer months from June 16 through September 15 are divided into two week intervals in the MBI report but are the same values for both the average and maximum temperatures throughout this time period. It is unclear from the temperature criteria proposal whether IL EPA intends to use a two-week averaging period or a 90 day averaging period when creating summer thermal limits for the period average in discharge permits. We suggest using a two week averaging period in order to give the aquatic life sufficient recovery time from thermal maximums and to prevent impairments that may cause failure to achieve the designated aquatic life use.
18. Other Criteria
For each of the criteria applicable to the waterways that are NOT the same as U.S. EPA’s 304(a) recommended criteria, IL EPA should provide supporting information similar to that included in U.S. EPA’s criteria documents. For example, when U.S. EPA develops 304(a) criteria, documentation includes a listing of acute toxicity data for freshwater animals (Table 1a from a U.S. EPA criteria document), the results of covariance analysis of freshwater acute toxicity versus hardness if the criterion is based on a relationship to hardness or some other water quality parameter (Table 1c from a U.S. EPA criteria document), a list of studies used to estimate the acute hardness slope if the toxicity is

related to hardness (Table 1d from a U.S. EPA criteria document), chronic toxicity data for freshwater animals (Table 2at from a U.S. EPA criteria document), results of covariance analyses if toxicity is related to hardness or some other water quality parameter (Table 2c from a U.S. EPA criteria document), the list of studies used to estimate the chronic hardness slope (Table 2d from a U.S. EPA criteria document), acute to chronic ratios (Table 2e from a U.S. EPA criteria document), ranked freshwater genus mean acute values with species mean acute-chronic ratios (Table 3a from a U.S. EPA criteria document), ranked genus mean chronic values (Table 3c from a U.S. EPA criteria document), criteria values (Table 3d from a U.S. EPA criteria document), any available data on toxicity to plants (Table 4a from a U.S. EPA criterion document), available data on bioaccumulation (Table 5a from a U.S. EPA criterion document), and any other data on the effects of the chemical on aquatic organisms that was considered but may not have been used to derived the criterion (Table 6a from a U.S. EPA criterion document).

For criteria that are based on U.S. EPA's recommended criteria but use a species recalculation process to reflect site specific conditions or for criteria for which U.S. EPA does not have recommended criteria, States need to provide or reference their established methodology for determining which species are included in the criteria derivation. The methodology could include the established list of species that the State has determined are inappropriate for criteria adopted within the State, along with the rationale for not including such species.

Although Illinois identified (separately, by fax) the species from U.S EPA's criteria document data set that it was not including as part of its derivation for cadmium, Illinois did not include the rationale for removing those species. U.S. EPA's assumption is that these species were not included because they are not resident of Illinois. Knowing Illinois' rationale is important as there appear to be other species in the U.S. EPA criteria document data set that Illinois should also not include based on the same reasoning, which could significantly affect the resulting criteria. Please provide or reference the established methodology used by IL EPA when determining which species to include in the derivation of each criterion.

19. Section 302.405 - Dissolved Oxygen

Please provide the basis for the assumption that a dissolved oxygen limit of 3.5 mg/l is protective of the Indigenous Aquatic Life – Early Life Stages Absent designated use.

20. Section 302.407 – Chemical Constituents

BETX - Region 5 is not able to provide comment at this point on the BETX chemical criteria. Region 5 is working internally with its Office of Research and Development to review the criteria. Once Region 5 has completed its internal review, it will provide comment on the BETX criteria to Illinois.

As a note, in order to streamline U.S. EPA's review and action of new or revised water quality standards, Region 5 is developing a description and list of the supporting documentation needed to ensure that a water quality standards submission is complete, according to the minimum requirements established in 40 CFR 131.6. States or Tribes

can rely on the list when developing their water quality standards submission package to ensure that the final submission package is consistent with the Federal regulations. Although Region 5 developed the list to be used when the State or Tribe submits its final water quality standards package to U.S. EPA for review and action, Region 5 recommends that the list also be used in submitting preliminary draft water quality standards. Region 5 will forward you the description and list as soon as it is finalized.