

**Stormwater Runoff Water Quality Newsletter
Devoted to Urban/Rural Stormwater Runoff
Water Quality Management Issues**

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This issue of the Newsletter is focused on Estimating the Potential Hazard of Chemicals (QSAR), update on the status of the US EPA SAB review of the Agency proposed statistical approach for developing nutrient criteria, US EPA permitting of pesticide application to water for control of aquatic weeds and mosquitoes, and announcements of US EPA Water Quality Standards Academy: Basic Course and the State of California Water Resources Control Board General Stormwater Construction Permit.

Estimating the Potential Hazard of Chemicals (QSAR)

Previous issues of the Newsletter (NL 7-3, 8-5, 9-3, 10-7, 11-7/8, 11-11) [available at <http://www.gfredlee.com/newsindex.htm>] discussed issues of unrecognized potential pollutants. Key to understanding the water quality significance of recently recognized potential pollutants is information on their toxicity and other potential water quality impacts. Such information has traditionally been obtained through animal testing. Because that approach is expensive and not expeditious, alternative methods have been explored for developing the needed information. An alternative that is proving useful for some chemicals is based in chemical structure activity relationships (QSAR). Dr. Gilman Veith developed the following discussion of this approach for evaluating the potential hazards of some chemicals.

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Gilman Veith received his Ph.D. from the University of Wisconsin in Madison, Wisconsin and began his government career in 1972 at the U.S. EPA National Water Quality Laboratory in Duluth, Minnesota, where he held a number of supervisory positions including the longest serving Laboratory Director. Since 1995, he helped organize and then served as the Associate Director for Ecology of the EPA's National Health and Environmental Effects Research Laboratory in Research Triangle Park, North Carolina. He revitalized the EPA Environmental Monitoring and Assessment Program and initiated the first nationwide monitoring of ecosystem health for coastal ecosystems. He has published extensively in the use of QSAR models in regulatory safety assessment, a record which has produced Citation Classics and gold medals from industry, governmental and international professional organizations. In 2003, he retired from EPA and joined the Secretariat for the Environment Director in the Organization of Economic Cooperation and Development in Paris, France, to Chair the OECD activities on QSAR models. He founded the International QSAR Foundation to Reduce Animal Testing, a charitable nonprofit research organization to accelerate the development of more useful QSAR methods in safety assessment.

Recent Example Publications

"The Physiological Basis of QSARs for baseline toxicity", SAR and QSAR in Environmental Research **20**, Nos. 3-4, (2009) 393-414.

"A conceptual framework for predicting the toxicity of reactive chemicals", SAR and QSAR in Environmental Research 17 (2006) 413-428.



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QSAR Models Assist in Setting Priorities for Chemical Testing

With the awareness that the global capacity to test and assess the safety chemicals is less than 25% of what is needed to keep up with new chemicals and a large majority of 100,000 existing chemicals in commerce lack crucial test data for the simplest of hazard assessments, regulatory agencies are looking for methods to extrapolate the data on test chemicals to similar chemicals that have not been tested. The extrapolation of chemical behavior from one chemical to another is often done with quantitative structure-activity relationships (QSAR) which relate chemical properties or activity directly to chemical structure.

The U.S. EPA was one of the first agencies to use QSAR in evaluating new chemicals for some hazards, due largely to the lack of testing authority in its Toxic Substances Control Act (TSCA). With the effects of DDT, PCBs and dioxins very much in the public eye, the hazardous properties that contribute to chemical persistence and bioaccumulation from eating fish were the first to be predicted. For example, the bioaccumulation of chemicals in fish can be estimated from the QSAR: $\log BCF = 0.85 \log P - 0.70$ where $\log P$ is a lipid partition constant which can be computed directly from the chemical structure. The minimal BCF test costs about \$10,000 and 30 days whereas the QSAR estimate can be made in less than a second. Most QSAR methods used by EPA are available at no charge at the website:

<http://www.epa.gov/opptintr/exposure/pubs/episuitedi.htm>

Since 1980, a number of regulatory agencies have used QSAR to set priorities for testing, and the Organization of Economic Cooperation and Development (OECD) in Paris has established validation principles for QSAR models as well as guidance on forming categories of similar chemicals. To minimize the costs of new infrastructure in order that member countries can use and evaluate QSAR models, the OECD has recently created the QSAR Application Toolbox which includes chemical databases for more than 166,000 chemicals in commerce as well as a rapidly expanding library of QSAR technology. The Toolbox is available free as a download at the OECD website:

http://www.oecd.org/document/54/0,3343,en_2649_34379_42923638_1_1_1_1.00.html

The recent REACH [*Registration, Evaluation, Authorisation and Restriction of Chemical substances*] legislation in the European Community is the first to include QSAR as an alternative to testing chemicals, particularly those with a small likelihood of being hazardous. As the testing requirements implemented under REACH are evaluated for chemical production or imports, it is expected that QSAR models will be used to set priorities and minimize the need

for further animal testing. Other pending trade agreements and even the potential reauthorization of TSCA may expand the use of QSAR models as a nontesting alternative to animal testing.

The 21st century shift away from the 1950 paradigm of “testing every chemical for every hazard” to a more efficient use of testing and assessment resources can only be accomplished with better computational models for the adverse effects of chemicals. Having said that, it is important to point out that many toxic effects of chemicals are not yet predictable from chemicals structure alone except through pattern recognition software, which is not acceptable for regulatory purposes. To meet this challenge and accelerate the development of QSAR models for hazard assessment, the International QSAR Foundation [IQF], a nonprofit research organization (www.qsari.org) has been facilitating design activities between government agencies, industry and animal welfare organizations. As animal testing of cosmetics in Europe becomes banned, a QSAR to predict contact dermatitis (skin sensitization) without animal testing is imperative, and the IQF is facilitating a Skin Sensitisation Consortium around on the leading QSAR models to refine this QSAR by 2010. The IQF is providing formal training opportunities for the OECD Toolbox in Europe, North America, and Asia to ensure that all stakeholders know the capabilities as well as the limitations of current QSAR models.

The greatest challenge to development of QSAR models is the need to forecast the lifetime effects of long term exposure to chemicals and chemical mixtures. Predicting low incidence effects such as liver failure, cancer, and neurological diseases requires an integration of QSAR models with models of adverse outcomes pathways. In August, 2009, the US EPA Science Advisory Panel reviewed the first integrated QSAR/adverse outcome pathway model for screening chemicals for endocrine disrupting potential. Since fewer than 4-5 % of all chemicals have structures which allow them to selectively impair reproduction in animals, including humans, and since the animal tests cost more than \$100,000 per chemical, the use of this integration model for endocrine disruption should make hazard assessment much more efficient by testing only chemicals which are likely to pose such hazards.

One might conclude from all this that the business community would rally behind the use of QSAR models to reduce testing costs. However, QSAR models also give regulators the ability to actually screen tens of thousands of chemicals and, for the first time, focus their assessment activities on the chemicals posing the greatest risks. The expanding QSAR capabilities, therefore, create significant business uncertainty that chemicals which have never been scrutinized before will find their way onto a list of regulatory priorities.

Please contact Dr. Veith for further information on QSAR.

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Update of SAB Review of US EPA-Proposed Statistically Based Nutrient Criteria

Stormwater Runoff Water Quality Newsletters NL 11-9 and 12-9 provided information on the US EPA adopted/proposed statistically based approach for developing criteria for aquatic plant nutrients (nitrogen and phosphorus). (A topic index and past issues of the Stormwater Runoff Water Quality Newsletter are available at <http://www.gfredlee.com/newsindex.htm>) The criteria were intended for use in identifying excessive concentrations of N and P compounds in a waterbody and to establish discharge limits for nutrients in municipal and industrial wastewaters and released in urban and agricultural stormwater runoff/discharges. As discussed

in NL 11-9, the US EPA has been using a statistically based “conditional probability” approach for nutrient criteria for streams in Pennsylvania and domestic wastewater discharges to those streams.

Dr. G. Fred Lee has been involved in developing, evaluating, and applying quantitative cause-effect relationships between aquatic plant nutrient loads/concentrations and nutrient-related water quality response in waterbodies in various parts of the world for more than 40 years. He and his associates have published extensively on issues key to the development and reliable application of such relationships in water quality evaluation and management. Many of those papers and reports are available on his website, www.gfredlee.com, in the Excessive Fertilization section, <http://www.gfredlee.com/pexfert2.htm>. Dr. Lee also has had extensive experience in developing and utilizing water quality criteria for the assessment and management of water quality problems. Lee and Jones-Lee (2008) (referenced below), as well as several others as noted in NL 11-9, have discussed significant technical deficiencies inherent in the conditional probability approach and why it not a technically valid approach for establishing nutrient criteria.

Lee, G. F., and Jones-Lee, A., “Comments on US EPA’s Conditional Probability Approach for Developing Phosphorus Nutrient Criteria,” Report of G. Fred Lee & Associates, El Macero, CA, September 26 (2008).
<http://www.gfredlee.com/Nutrients/PCriterionCondProb.pdf>

Given the serious questions within the technical community about the reliability of the conditional probability approach for water quality criteria development, and the repercussions of the application of such an unreliable approach, representatives of municipal wastewater discharges in Pennsylvania and nearby areas, working through Hall and Associates (a Washington, DC law firm), petitioned the US EPA to conduct an independent peer review of the conditional probability approach for establishing nutrient criteria. The US EPA agreed to have that approach reviewed through its Science Advisory Board (SAB). As discussed in NL 12-9, that SAB review was held on September 9-11, 2009. In connection with that review, the US EPA announced that it planned to expand the nutrient development approach to include a variety of statistical approaches for the establishment of nutrient criteria and to extend the use of these expanded options to a national program.

Information on that meeting is available at,
<http://yosemite.epa.gov/sab/sabproduct.nsf/WebBoard/252B592016186655852576100055CBD?OpenDocument> and
<http://www.epa.gov/fedrgstr/EPA-SAB/2009/August/Day-18/sab19759.htm>

The US EPA also invited comments on the proposed nutrient criteria development approach. Drs. G. Fred Lee and Anne Jones-Lee (Lee and Jones-Lee, 2009) (referenced below) submitted comments to the US EPA on the unreliability of such statistical approaches for establishing nutrient criteria. They pointed out that absent strong and demonstrated cause-and-effect couplings, statistical correlations are not technically valid for assessing or predicting impacts of nutrient inputs and can be expected to lead to inappropriate nutrient discharge limits from point and non-point sources.

Lee, G. F., and Jones-Lee, A., "Comments on 'US EPA "Empirical Approaches for Nutrient Criteria Derivation" Prepared by US EPA, Office of Water, Office of Science and Technology, Science Advisory Board Review, Draft August 17, 2009'," Report of G. Fred Lee & Associates, El Macero, CA, September 4 (2009).
http://www.gfredlee.com/Nutrients/EPA_Empirical_CritDevel.pdf

Questions or comments on the Lee and Jones-Lee reports on this issue can be directed to Dr. G. Fred Lee at gfredlee@aol.com.

There have been several reports concerning the discussions that were held at the SAB review of the US EPA statistical approach for establishing nutrient criteria. "*Inside EPA*" (an environmental news service) published the following review of that SAB meeting:

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"SAB FAULTS EPA'S NUTRIENT GUIDE, BOLSTERING POTENTIAL INDUSTRY SUIT

An EPA Science Advisory Board (SAB) panel is blasting a draft agency guidance describing methods to craft strict numeric nutrient criteria, saying a key statistical method does not prove nutrients alone cause harm, which an industry lawyer says could form the basis for a lawsuit if EPA does not heed the panel's criticisms.

The SAB panel offered "harsh" criticism of the guidance, the panel's chair, Dr. Judith Meyer, said at a Sept. 11 meeting, but also underscored that it believed setting nutrient criteria was an important effort. "We felt that the document in its current form was not adequate," Meyer said, "but we see this as a viable way of setting numeric nutrient criteria and we see that it's very important that those numeric criteria be set."

SAB, which will synthesize its findings into a final report in coming months, is likely to suggest wholesale changes to the guidance, including a likely call for EPA to encourage consideration of additional factors that affect how nutrient pollution impacts water quality.

EPA officials appeared receptive to changing the guidance, with key water office official Dana Thomas saying she "enjoyed" the panelists' input.

At issue is a draft EPA guidance intended to help states develop numeric risk-based limits, known as criteria, for addressing nutrient pollution. Under the Clean Water Act, states and other regulators use the criteria to set enforceable water quality standards.

Nutrients, which stem from fertilizer runoff, power plant emissions and discharges from point sources, are responsible for eutrophication -- a process that results in reduced oxygen levels in waters, such as the hypoxic "dead zone" in the Gulf of Mexico and other large watersheds.

Environmentalists have long urged the agency to require states to set numeric nutrient criteria for their waters, which are more easily enforceable, rather than narrative criteria. Frustrated with the slow pace of progress, environmentalists had begun suing the agency to require development of the numeric criteria. Late last month, activists won a settlement from EPA and the state of Florida on a schedule for implementing numeric standards for nutrient pollution in the state, a move activists say will propel similar efforts nationwide.

EPA's Inspector General last month also urged the agency to speed development of numeric nutrient criteria (Water Policy Report, Aug. 31).

The draft guidance suggests regulators use empirical approaches, including a controversial statistical method -- called the conditional probability approach -- to describe the harmful "stressor-response" relationship between nutrients in streams and adverse effects on invertebrate populations. EPA says states have registered the most interest in methods to describe the stressor-response relationship -- like the guidance does.

The agency also argues numeric nutrient criteria are crucial to facilitate protective permits and create targets that can foster water quality trading programs.

But industry officials are strongly resisting the efforts. Shortly after the recent Florida settlement was unveiled, a group of Florida utilities filed a notice of intent to sue EPA for its January 2009 determination that Florida is required to develop the criteria (see related story).

And at a Sept. 9 hearing before the SAB panel, industry groups urged the panel to kill EPA's draft guidelines, saying the draft is "fundamentally flawed" and "hopeless."

"Abandon the effort to develop nutrient criteria. The method is fatally flawed, and does not work," Dr. Dominic DiToro of the University of Delaware -- who is consulting for industry -- told the panel. DiToro and other critics say the draft drastically simplifies the myriad factors by which nutrients cause increased algae and plankton growth, which in turn reduce oxygen levels and cause other ecological problems.

John Hall, a lawyer who represents wastewater treatment plants, says he plans to work with the agency to improve the guidance. However, he also argues the SAB panel finding that stressor-response relationships do not prove causation could help form an administrative record bolstering an industry suit against criteria based on it if EPA did not incorporate the criticisms. "They have to" adopt the criticisms, Hall says.

Hall has long raised concerns about EPA's approach, filing a petition earlier this year requesting

EPA seek SAB review of the controversial document after the agency sought to use its approach when setting pollution load limits, known as a total maximum daily load, in Pennsylvania.

He said in an interview that he is optimistic EPA -- with the SAB panel's guidance -- can improve the guidance into a "workable" approach. Describing the SAB's deliberations as the "single greatest thing the SAB has ever done -- it's just that fantastic," Hall says a guidance revised in line with the SAB criticisms will result in numeric nutrient criteria that are stratified according to stream and river features that change how nutrients interact with a waterbody.

For instance, SAB panel members noted repeatedly that the methods to derive numeric nutrient criteria should employ multiple variables -- not just nutrient levels -- such as flow velocity, canopy cover and dissolved oxygen.

Hall says criteria developed with such multivariate analysis won't end up as a single nutrient level number for every state waterbody but rather a set of "target values" for different types of rivers and streams. Hall says another key benefit of the approach is that in many instances the more nuanced criteria will suggest stream restoration, like tree planting along banks and riparian buffers, is a better, more cost-effective solution than nutrient reduction.

However, the effort could face opposition. One environmentalist opposes this method because, the source says, it wouldn't adequately protect downstream waters. "We know nutrient runoff is a major problem, and even if it's not a problem" for some waterbodies, like a well canopied stream, "it's going to be a problem downstream."

SAB panelists also criticized EPA's use of controversial approaches, such as a modeling method called conditional probability approach to assess the stressor-response relationship -- for ascertaining the relationship between nutrient pollution and environmental harms.

The SAB panelists -- and industry critics -- argue the methods do not prove nutrients alone cause harm because they only assess the statistical probability that two events are related, not why they are related. Panelists said EPA's stressor-response relationship and the statistical method could not be used to prove a scientifically defensible cause-and-effect relationship, a key legal requirement for setting criteria.

Stressor-response "gives one a very good indicator of what the relationships are but it does not demonstrate cause and effect. Mechanistic modeling or experimental approaches would provide further justification for the relationships that are established with stressor-response," said Meyer, a distinguished research professor emeritus at the University of Georgia.

But one EPA official from the Office of Research & Development rejected that criticism at the panel's Sept. 9 session, describing how research into the harmful effects of cigarette smoking was unable to "prove" cancerous effects until decades after the research began. Still, the official argued, people knew cigarette smoking was unhealthy far before then.

Hall, the industry lawyer, compares the method to how ice cream sales and drowning incidents correlate with one another because both occur on hot summer days. But it wouldn't make sense to argue children eating ice cream is causing the drowning deaths, he says.

The SAB panel is scheduled to finalize its report by December. It will then undergo quality review by the full SAB.

EPA officials at the hearing declined to comment. -- Jonathan Strong"

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John Hall of Hall and Associates developed the following discussion of the SAB meeting.

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News Release

Hall & Associates, Washington, D.C.

**EPA SCIENCE ADVISORY BOARD REJECTS NEW
GUIDANCE ON NUTRIENT CRITERIA DERIVATION**

The EPA Science Advisory Board ("SAB") met on September 9-11, 2009 to review new draft guidance entitled "Empirical Approaches for Nutrient Criteria Derivation" (EPA, August 17, 2009). The new EPA approach did not consider whether or not nutrients were triggering excessive plant growth in streams, but rather sought to develop a direct relationship between invertebrate populations and ambient nutrient levels. The review committee unanimously rejected the EPA-recommended simplified approaches for establishing nutrient criteria for fresh waters concluding that the approaches failed to establish a cause and effect relationship between nutrients and the impact of concern. As stated by Dr. Judith Meyer, distinguished research professor emeritus at the University of Georgia and Committee chair, stressor-response "gives one a very good indicator of what the relationships are but it does not demonstrate cause and effect. Mechanistic modeling or experimental approaches would provide further justification for the relationships that are established with stressor-response."

The Peer Review Committee stated that a scientifically defensible approach must account for the numerous environmental factors and known plant growth mechanisms that govern whether or not the addition of nutrients will cause adverse impacts at a particular location. John Hall, of

Hall & Associates, hailed the SAB action as the most important determination in a decade. Hall believes adherence by EPA to the SAB conclusions will set the agency on the correct path for assessing nutrient impacts and developing appropriate solutions for restoring impaired waters. The affected parties have requested that EPA withdraw the various TMDL actions that were premised on the now discredited methods. EPA has yet to respond to that request.

Background

EPA had prepared the guidance to assist states in developing water quality criteria for nutrients. For the past two years EPA had been informally recommending that states use statistical approaches as scientifically defensible methods for identifying “protective” levels for nutrients in rivers and streams. In August 2008 a petition for SAB review was filed by Hall & Associates on behalf of a coalition of Pennsylvania communities that objected to the approaches as technically unsound and lacking the scientific peer review approval that must precede use of all new EPA procedures of national significance. The petition asserted that the new EPA approach would force unnecessary nutrient regulation, misdirect water body restoration efforts and waste energy and resources on an unprecedented scale. The petition stated that the SAB review would be one of the most important technical evaluations in decades, with hundreds of billions of treatment dollars at stake.

Prior to the SAB review EPA had applied one of the new empirical methods, conditional probability analysis, to generate extremely restrictive stream nutrient standards (0.02 5-0.040 mg/l total phosphorus) for three Pennsylvania watersheds. The TMDLs, finalized on June 30, 2008, called for drastic reductions in total phosphorus, costing hundreds of millions of dollars and prohibiting virtually all development in the watersheds. This new approach to nutrient criteria derivation was even applied to waters never identified as nutrient impaired on Section 303(d) lists and where EPA had concluded excessive plant growth did not occur. The methods were also used to claim that nutrients were the cause of reduced invertebrate populations in a concrete lined channel passing through the City of Harrisburg. The affected communities contacted EPA Headquarters in April 2008, complaining that the approaches applied in the TMDLs were grossly flawed. In June 2008 EPA affirmed that the Regional Office was simply following EPA Headquarters’ advice on acceptable methods for nutrient endpoint development and that these procedures were recommended for nationwide application. Given the unprecedented impact of these methods, Hall & Associates asserted that the new methods should have undergone a rigorous peer review prior to their application, in accordance with EPA’s own peer review policy. This request for review was supported by Senate and Congressional representatives of the communities affected by the TMDLs.

In December 2008 EPA agreed to the peer review, again asserting that if the peer review approved of the approaches, the methods would be recommended for nationwide implementation. The draft guidance document released in late August 2009 presented empirical methods for five types of regression analysis (simple linear, quantile, logistic, multiple linear, and discontinuous) and conditional probability analysis as a basis to develop criteria for total nitrogen (TN) and total phosphorus (TP). Each of the six empirical methods presumed that nutrients (i.e., TN, TP) cause a response (e.g., chlorophyll-a concentration, invertebrate taxa richness) and that the response is related to use impairment. EPA asked the SAB to review these methods and assess their appropriateness for deriving water quality criteria.

The SAB meeting concluded on September 11 with an oral summary of the preliminary findings of the Peer Review Committee. On the whole, there was an overwhelming consensus by the SAB Committee that the empirical approaches recommended by EPA do not demonstrate the “cause-and-effect” relationship necessary to derive water quality criteria and that a more

mechanistic understanding of how nutrients affect the environment is required. The Committee found that the approaches recommended by EPA were fundamentally lacking. Response variables must be coupled to designated uses in a clear and rational manner before those responses can be used to derive criteria. Rather than attempt to derive nutrient criteria using these statistical methods, the Committee concluded that a solid conceptual model, including all the major stressors governing the dynamics of the response variable, is essential to assess impairments associated with nutrients. In particular, the Committee concluded that conditional probability analysis is only inferential and cannot serve as the basis for developing a scientifically defensible criterion.

The Board will reconvene via teleconference on November 2, 2009, to review the findings of each subcommittee; a final report is due to EPA by December 10, 2009.

For more information contact John C. Hall at 202-463-1166 or jhall@hall-associates.com.

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US EPA Permitting of Pesticide Application to Water

The US EPA is developing a National Pollutant Discharge Elimination System (NPDES) general permit for discharges from areas in which pesticides have been applied, in the few areas nationwide where the US EPA remains the NPDES permitting authority. The US EPA expects the 45 states that are authorized as NPDES permitting authorities to use its general permit to guide them in developing and issuing their own permits. A webcast was held on October 7, 2009 covering these issues:

- Current Legal Status of NPDES Requirements for Discharges from the Application of Pesticides
- Schedule for Developing NPDES General Permits for such discharges
- Current Agency Thoughts on General Permit Conditions related to:
 - Scope of general permit
 - Notice of Intent (NOI) for obtaining permit coverage
 - Technology-Based Effluent Limits
 - Water Quality-Based Effluent Limits
 - Monitoring, Reporting, and Recordkeeping requirements

The PowerPoint slides covering these topics will be posted in few days at www.epa.gov/npdes/training website. Those interested in this issue should follow further development of this permit.

Water Quality Standards Academy: Basic Course (December 7-11, 2009 in Arlington VA)

The Water Quality Standards Academy: Basic Course is an introductory course designed for those with fewer than six months' experience with water quality standards and criteria programs. Others may benefit from the course, including veterans of the water quality standards program who want a refresher course.

The 5-day course is aimed at states, territories, tribes, environmental groups, industrial groups, municipalities, the academic community, federal agencies, watershed groups, and other interested parties. The course is offered approximately twice a year.

Water quality standards are the cornerstone of state, territory, and tribal water quality standards management programs. The Basic Course is a comprehensive and highly structured course that introduces students to all aspects of the water quality standards program, including:

- the interpretation and application of water quality standards regulation;
 - policies and program guidance;
 - the development of water quality criteria (human health, aquatic life, nutrient, and biological);
- and
- other facets of the water program.

To receive email notification of upcoming Water Quality Standards Academies as they are announced, email Greg Smith at gsmith@glec.com and put WQSA EMAIL in the subject line. (Information is collected by Great Lakes Environmental Center on contract to EPA). WQSnews is operated by the Standards and Health Protection Division (SHPD) of US EPA's Office of Water in Washington DC. If you have questions about this announcement, please use the contact information provided above. If you have questions or comments about WQSnews in general, please e-mail WQSnews@epa.gov.

The National Water Quality Monitoring Council (NWQMC)

The Seventh National Monitoring Conference-Monitoring from the Summit to the Sea will be held in Denver, Colorado from April 25-29, 2010

The conference will focus on the many facets of water quality and quantity monitoring for improved understanding, protection, and restoration of our natural resources and communities. The conference is a centerpiece forum for communication that generally attracts 500-800 water practitioners from all backgrounds, including governmental organizations, volunteers, academia, watershed and environmental groups, and the private sector-to exchange information, develop skills, and foster collaboration and coordination. It promises to offer discussion of new findings on the quality of the Nation's streams and groundwater, estuaries, and lakes, as well as recent innovations and cutting-edge tools in water-quality monitoring, assessment, and reporting. Information on that conference is available at <http://acwi.gov/monitoring/conference/2010/>

SWRCB General Stormwater Construction Permit

The California State Water Resources Control Board adopted Order No. 2009-0009-DWQ, "National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities." Information on that permit is available at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml