

Protecting the Air Quality and Economic Viability of Seaports

The United States is served by some 360 commercial seaports, which represent a significant part of the country's economy. These seaports are responsible for moving more than 99 percent of the nation's overseas cargo by volume. According to government statistics, the value of international goods shipped through U.S. seaports was \$1.73 trillion in 2011, representing more than 11 percent of the total U.S. gross domestic product. With the growth in international trade, shipping is projected to substantially increase in the next decade.

Because U.S. seaports are such major hubs of economic activity, they also can be major sources of pollution. Enormous ships with engines running on a variety of fuels, thousands of truck visits per day, diesel locomotives pulling mile-long trains of cargo, and other activities at marine ports cause an array of environmental impacts that can potentially affect local communities and the environment. One of the most significant of the environmental impacts is air pollution. This impact is amplified by the fact that most of the major seaports are in regions of the country currently classified as nonattainment with respect to the nation's air quality standard for ozone.

To compound air quality issues, most major seaports in the U.S. are expanding to accommodate even greater cargo volumes. In addition, bottlenecks to shipping are being removed. For decades, the size of the Panama Canal has been a constraint on the maritime industry, which has been building ships that significantly exceed the canal's navigable dimensions. However, the project to widen the canal is scheduled to be completed in 2015, allowing larger vessels capable of carrying increased cargo tonnage to frequent U.S. seaports.

The management of air quality at U.S. seaports focuses on two categories of port emissions: those



associated with improvements and those associated with operations. Port improvements, such as dredging and landside construction activities that are federally funded, licensed, or permitted, can require additional regulatory approval under the General Conformity provisions of the Federal Clean Air Act (CAA). The General Conformity rule requires that it be demonstrated that projects that qualify as federal actions in nonattainment areas meet the requirements of the CAA and state plans for implementing the Act (SIPs). This conformity determination is a two-step process beginning with an applicability analysis, which is performed by comparing the project's annual emissions to "de minimis" pollutant thresholds outlined in the conformity rule. The more severe the "nonattainment" status of a region, the smaller the corresponding de minimis threshold. Several exemptions to the General Conformity applicability are favorable to seaports. For example, dredging that is considered "maintenance" is not subject to the General Conformity rule.

The actual conformity determination requires a demonstration that emissions under the project do not exceed emission limits proscribed under the SIP and that the project does not cause or contribute to the

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FROM THE TRENCHES

A Conversation between three of Zephyr's Founders and Joe Zupan, President

On the occasion of our twentieth anniversary, I had a conversation with three of Zephyr's founders: Celeste Wiley, who is still with the firm, and Jeanne Yturri and David Cabe, each of whom has retired from Zephyr in the past year or so. I was especially interested in having them reflect on what their original vision for Zephyr was twenty years ago, and how the reality compares twenty years later.

With no further ado, a conversation with our founders:

JAZ: *When you founded Zephyr 20 years ago, what was your vision for what the company would become?*

Celeste: A company that attracted top talent where people worked collaboratively. A company that provided a work/life balance.

Jeanne: My vision and hope was that Zephyr would always be a company of people with different backgrounds and skills who did excellent work together and shared these character traits: puts team before self, is committed to continual improvement, is honest even when it's hard, and shows respect for others at all times.

David: My vision was narrow and unfocused. I was most interested in financial return and securing my retirement, but didn't really know how to reach either of these goals. Fortunately, I had partners with enough business sense to take the long view and keep Zephyr on course.

JAZ: *How does the reality 20 years later compare with your original vision?*

Celeste: Better than I dreamed possible!

Jeanne: I believe the founders' vision for character, teamwork, and excellence has been Zephyr's reality for the better part of 20 years.

David: Zephyr became a company that far exceeded my ability to dream for reasons less related to the setting of financial and retirement goals than deciding who we wanted to be.

JAZ: *As the company began and grew, what aspect of growing a company was more difficult than you expected?*

David: Dealing with internal personality differences during Zephyr's childhood and adolescence. I believe we overcame these issues by gradually learning to live by the principle that Zephyr is a team and not a collection of stars.

Celeste: Ditto what David said.

Jeanne: I believe the most difficult thing we face is the rare client who puts the burden of their compliance obligations and deadlines on our shoulders (rather than their own) which creates undue stress, mismatched expectations, and hard feelings between us and clients we care about.



JAZ: *What is your favorite thing about Zephyr?*

David: I'm proudest of Zephyr's very high level of respect for its employees and its clients and how this has translated into success in more ways than I could have imagined.

Celeste: My colleagues — hands down.

Jeanne: I love my fellow Zephyrites and enjoy how each individual contributes to Zephyr's success in a unique way. Yet my favorite thing about Zephyr is its culture that is humble enough to recognize that the sum is greater than its individual parts.

JAZ: *It's a bit rare for an American company to be in business for more than twenty years — only about one quarter of new companies make it that long. What do you imagine Zephyr's future will be?*

David: I picture a successful, growing, internally held company with the current group of Zephyr's young leaders running the show. I'm convinced this can happen as long as Zephyr sticks to its core principles.

Jeanne: This will sound arrogant coming from a founder, but I think that Zephyr will continue to be "the best firm to work for" and "the best firm to hire" if it continues to embrace the vision and guiding principles that the founders did. I have faith in Zephyr to continue to prosper beyond my wildest dreams!

Celeste: Zephyr will continue to grow and venture out and provide new services and locations. "The future is so bright I gotta wear shades!"

JAZ: *Each of the people who are working for or have worked for Zephyr owes a vote of thanks to our founders for creating an opportunity for us to build on their vision and success. The culture of respect and accountability as well as a dedication to excellent client service has helped us all to build an enterprise of lasting value. Thank you! ✨*

EPA IRIS Reform to Increase Opportunities for Input to Future Assessments

One of the Environmental Protection Agency's (EPA) highly influential programs may also be one of the least understood, even among seasoned environmental professionals. The EPA Integrated Risk Information System (IRIS) program develops toxicology assessments that EPA describes as "the premier source of hazard and dose-response information for environmental pollutants." The program provides a publicly accessible database of more than 550 chemical specific assessments. These IRIS assessments are not governed by a statutory program or promulgated rules, and to date have not been viewed by courts as subject to notice and comment rulemaking procedures. EPA internally developed IRIS in 1986 for use by agency risk assessors, and since that time IRIS has evolved substantially.

EPA now describes IRIS assessments as "widely used by EPA's programs and regions, as well as by states, international organizations, and the public, to support decision-making and regulatory activities." Risk assessors use IRIS data as a basis for site-specific risk assessments. Also, EPA has used IRIS assessments as a basis for regulatory rulemakings under a range of programs, such as those that regulate air emissions and release reporting. In addition, IRIS assessments have provided evidence for liability in litigation, with expert witnesses relying on the IRIS database as a government-endorsed evaluation of hazards from exposure to various substances. With the increasing emphasis on collecting hazard data for registry and regulation of chemical products in the United States, as well as in Western Europe, parts of Asia, and other regions, the EPA's future IRIS inventory (along with other types of assessments) may reach an even larger audience.

Controversy is unsurprising given the influence of the IRIS database. IRIS has attracted significant controversy about issues such as the validity of the assessments, the time that assessments require to complete, and transparency. Controversy is also fueled by scientific and policy debates, and the latitude that assessors have to exercise judgment on matters such as how to apply EPA guidance to a specific IRIS evaluation, define the scope of a given scientific question, balance and reconcile conflicting data, and conduct modeling. Another issue is how rigidly to apply IRIS assessments, as they have scientific limitations and also are understood to be estimates that incorporate adjustments to ensure that they are conservative.

As the program has evolved and in response to critique, EPA has endeavored to reform IRIS. As early as 1993, EPA assembled a team to study the entire IRIS process, from nomination of substances through the delivery of information. At that time, EPA



assessed how to improve public involvement and peer review, and to address the limitations of IRIS information for supporting risk management decisions. Scrutiny of IRIS was heightened in 2011, when a panel of the National Research Council (NRC) of the National Academy of Sciences noted recurring scientific analytical and methodological flaws in EPA's IRIS assessments as part of its Peer Review Report of a draft formaldehyde IRIS assessment. The NRC panel also noted pre-existing Agency guidance that EPA had been failing to apply rigorously to its IRIS assessments. In the several years since these recommendations, EPA has again been examining IRIS and identifying opportunities to improve both the science and the process. Also, EPA's "NexGen" Program is focused on improving computational and modeling methods.

Currently, 47 IRIS assessments are in various stages of development, and not all are receiving procedural or scientific reform. For the next generation of IRIS assessments, EPA has promised to make changes to improve the scientific integrity of assessments, improve the productivity of the Program, and increase transparency so issues are identified and debated early in the process. On the latter issue, for new assessments, EPA is now providing opportunities for public input during the initial scoping, but be aware that diligence is required and prepare meaningful input for these public meetings.

The IRIS database has become increasingly influential and includes both manufactured chemicals and substances found in nature. It can be expected the database will continue to guide the public's understanding about the level of risks associated with exposures to these assessed substances and to influence regulatory requirements. Recent IRIS reforms are designed to accelerate expanding the database, and also to improve and shed light on future assessments, in part by providing increased stakeholder input. ✨

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News Briefs

national news

President Orders Tightening of Emissions Limits on Trucks

On February 18, President Obama directed the Environmental Protection Agency (EPA) and the Department of Transportation (DOT) to collaborate and produce a rule, to go into effect March 2016, that would tighten the fuel efficiency and emissions standards for trucks with model-years of 2018 and later. EPA and the DOT have already implemented standards for model-year 2012 to 2025 passenger vehicles and model-year 2014 through 2018 heavy-duty trucks and buses. For more information, contact Michele Foss at 281.668.7342 or mfoss@zephyrenv.com.

EPA Issues New Rules to Reduce Sulfur Content in Gasoline

On March 3, EPA issued its new Tier 3 motor vehicle emission and fuel standards to reduce the sulfur content of gasoline from 30 ppm to 10 ppm by 2017. Cutting sulfur improves the efficiency of catalytic converters in vehicles, and EPA maintains sulfur reductions can support many states' efforts to meet the National Ambient Air Quality Standards (NAAQS). Refinery representatives say that it will not be possible to meet the 2017 deadline; however, EPA maintains the final rules will address a number of flexibilities, including longer lead-times to show compliance, "banking" emission credits, and provisions to transfer deficits forward one year. For more information, contact Matt Miller at 512.579.3841 or mmiller@zephyrenv.com.

EPA Considers More Stringent Ozone Air Quality Standard

In January, EPA released two criteria documents as part of its on-going review of the NAAQS, making clear that tightening of the standard is likely — possibly to concentrations as low as 60 parts per billion. Any reduction will increase the number of ozone nonattainment areas in the United States and add regulatory hurdles to industries planning to expand in both existing and new nonattainment areas. Although EPA believes tightening the ozone standard is necessary to protect public health, a number of toxicologists and epidemiologists assert that clinical and epidemiological studies do not support this conclusion and are filing comments on the documents. EPA recently pushed

back its anticipated date for taking final action until late 2015. For more information, contact Lucy Fraiser at 512.879.6652 or lfraiser@zephyrenv.com.

Solvent Wipes Conditionally Excluded from Waste Definition

On January 31, EPA modified its Resource Conservation and Recovery Act (RCRA) rules to conditionally exclude solvent contaminated wipes that can be cleaned and reused from the definition of solid waste and conditionally exclude wipes that are disposed from the definition of hazardous waste. However, "disposable wipes" that are hazardous waste due to the presence of trichloroethylene remain subject to applicable hazardous waste regulations. The exclusions do not apply to wipes contaminated with listed hazardous wastes other than solvents or which exhibit the characteristic of toxicity, corrosivity, or reactivity due to other contaminants. Solvent liquids are still considered a solid waste and, potentially, a hazardous waste. These rule changes became effective immediately in states and territories that are not RCRA-authorized; however, since they are less stringent than previous RCRA requirements, their adoption in RCRA-authorized states such as Texas and Maryland is optional. For more information, contact Betty Moore at 512.879.6622 or bmoore@zephyrenv.com.

EPA Proposes Revised Greenhouse Gas Emissions Rules for Power Plants

On January 8, EPA revised its proposed new source greenhouse gas (GHG) emissions standards for power plants. Previously, EPA proposed a single limit of 1,000 pounds of carbon dioxide (CO₂) per megawatt-hour for new fossil-fuel fired power plants, allowing an option to demonstrate compliance based on a 30-year emission average with the future use of carbon capture and storage (CCS). The revised rule proposal now includes separate numeric CO₂ emission limits for three different source types: large gas-fired turbines, small gas-fired turbines, and boilers and integrated gasification combined cycle units. The revised proposal also provides a 7-year emission averaging option for solid fuel-fired sources and would exempt from the rule all units with less than a one-third capacity factor (averaged over 3 years). For more information, contact Eric Quiat at 512.579.3823 or equiat@zephyrenv.com.

DOE/Industry Testify on Availability and Costs of Carbon Capture and Storage Methods

On February 14, the U.S. Department of Energy's (DOE) Deputy Assistant Secretary for Clean Coal, Dr. Julio Friedmann, testified before the House Energy and Commerce Committee's Subcommittee on Oversight and Investigation that CCS technologies available today could increase wholesale power prices by 70 to 80 percent, which is significantly more than power companies could recoup by selling the captured carbon. In addition, he testified that the first generation of CCS technology is commercially available today and that second generation technologies could ultimately halve the price increase. In contrast, power company representatives at an EPA public hearing earlier in February stated that the CCS technology (employed in current demonstration projects) is not commercially available and that EPA should not rely on the current CCS demonstration projects in setting proposed standards. For more information, contact Lou Corio at 410.312.7912 or lcorio@zephyrenv.com.

EPA Revises Guidance for Using Diesel in Oil and Gas Hydraulic Fracturing

On February 12, EPA issued final guidance under the Safe Drinking Water Act for the use of diesel fuels in oil and gas hydraulic fracturing operations. The primary purpose of the new guidance is to clarify which materials may qualify as diesel fuels. The guidance also recommends the factors regulators should consider to ensure protection of underground sources of drinking water when issuing permits for hydraulic fracturing operations that use diesel fuels. For more information, contact Dave Sorrells at 512.879.6626 or dsorrells@zephyrenv.com.

OSHA Targets Facilities with Higher Injury Rates for Inspections in 2014

On March 6, the Occupational Safety and Health Administration (OSHA) provided notice that, in 2014, it will target for inspections those manufacturing workplaces with a DART rate ≥ 7.0 or a DAFWII case rate ≥ 5.0 , and non-manufacturing workplaces with a DART rate ≥ 15.0 or a DAFWII case rate ≥ 14.0 . The DART rate is a value calculated from the number of cases involving days away from work, restricted work activity, or transfers to another job, and the DAFWII case rate is a value calculated from number of cases that involve days away from work. OSHA's site-specific targeting program applies to high hazard, non-construction workplaces with 20 or more workers. Nursing and Personal Care facilities are not included in this list as they are subject to a different inspection program. For more information, contact Bonnie Blam at 512.579.3817 or bblam@zephyrenv.com.

EPA to Establish "E-Manifest" System

On February 7, EPA published its final rule establishing a national system for the electronic submittal and tracking of waste manifests, with a goal of making the manifesting process more cost effective for both industry and the government. Using e-manifests,

which will contain the same information as paper manifests, each party handling the waste will electronically sign the manifest, ensuring a documented chain of custody from cradle to grave. After the waste is received at the disposal facility, the system will distribute a copy of the e-manifest to the generator. Although the rule will go into effect August 6, the e-manifest system is not scheduled to be online until October 2015. Paper manifests will still be accepted initially, but will be eventually phased out. For more information, contact Robin Cosgrove at 512.879.6623 or rcosgrove@zephyrenv.com.

EPA Proposes New Hazardous Air Pollutant Standards for Amino/Phenolic Resin Manufacturing

On January 9, EPA proposed to amend its Subpart YY and Subpart OOO national emissions standards for hazardous air pollutants to correct and clarify regulatory provisions related to periods of startup, shutdown and malfunction; add provisions for affirmative defense; add requirements for electronic reporting of performance test results; clarify provisions pertaining to open-ended valves and lines; add monitoring requirements for pressure relief devices; and add standards for previously unregulated hazardous air pollutant emissions sources. For more information, contact Ellen Ward at 512.879.6634 or eward@zephyrenv.com.

state news

Maryland to Propose Short-Term SO₂ and NO_x Emissions Standards for Coal-Fired Power Plants

This spring, the Maryland Department of the Environment (MDE) will be proposing short-term, unit-specific, sulfur dioxide (SO₂) and nitrogen oxide (NO_x) emissions standards for coal-fired power plants. The dispersion modeling-informed SO₂ pounds-per-hour standards are intended to maintain continued compliance with the 1-hr SO₂ NAAQS, and the NO_x pounds-per-million Btu standards, expressed as 24-hour rolling averages, are intended to address peak day emissions that impact 8-hour ozone nonattainment in Maryland. Under the proposed NO_x rule, MDE would allow utilities to meet system-wide average NO_x emission standards and would require utilities to submit emission control plans to minimize NO_x emissions for affected units under low capacity operations. Compliance with the new rule would be required sometime in 2015. For more information, contact Lou Corio at 410.312.7912 or lcorio@zephyrenv.com.

Texas Governor Appoints Zak Covar as New TCEQ Commissioner

On January 10, Texas Governor Rick Perry appointed Zak Covar as Commissioner of the Texas Commission on Environmental Quality (TCEQ) for a term to expire August 31, 2015. Covar replaces Carlos Rubenstein, who was named by the Governor as

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Chairman of the Texas Water Development Board on September 1, 2013. Covar was previously TCEQ Executive Director (ED), having joined the Agency in 2007. Prior to joining the TCEQ, he was the environmental and natural resource advisor to Governor Perry. In related moves, former Deputy ED Richard Hyde was named to replace Covar as ED and Stephanie Bergeron Perdue was named to replace Hyde as Deputy ED. For more information, contact Ed Fiesinger at 281.668.7353 or efiesinger@zephyrenv.com.

EPA Proposes to Approve the Texas Flexible Permit Program

On February 12, EPA proposed to conditionally approve the TCEQ's flexible air quality permitting rules. Originally submitted for approval to EPA in 1994, the rules were formally disapproved by EPA in 2009 because EPA believed that they did not assure that the flexible permitting program would be a minor New Source Review (NSR) program only. Full approval is contingent upon the TCEQ adopting and submitting to the EPA an approvable state implementation plan revision addressing its October 21, 2013 responses to EPA concerns. For more information, contact Ed Fiesinger at 281.668.7353 or efiesinger@zephyrenv.com.

Fish and Wildlife Service Lists Two Texas Salamanders as Threatened

On February 1, the U.S. Fish and Wildlife Service (USFWS) listed the Georgetown salamander and the Salado salamander as threatened under the Endangered Species Act. The primary threat to both species is habitat degradation due to declining water quality and disturbance of surface springs. In a related action, USFWS proposed a special rule that would allow for take of the Georgetown salamander incidental to activities that are consistent with conservation measures in a Georgetown, Texas water quality ordinance. The ordinance seeks to reduce threats to the species by requiring geological assessments and the establishment of non-disturbance and minimal disturbance zones. For more information, contact Clay V. Fischer at 512.879.6629 or cfischer@zephyrenv.com.

EPA Conditionally Approves Texas Greenhouse Gas Permitting Rules

On February 4, EPA signed a proposed rule that conditionally approves the TCEQ's proposed GHG permitting regulations, which will allow the TCEQ to become the permitting authority for GHG Prevention of Significant Deterioration (PSD) permits in Texas. The TCEQ requested that EPA conditionally approve the proposed GHG permitting regulations while TCEQ is simultaneously completing the rulemaking process, which includes public comment. EPA is also proposing to withdraw the federal implementation plan (FIP) that had previously established EPA as the GHG permitting authority. For more information, contact Eric Quiat at 512.579.3823 or equiat@zephyrenv.com.

EPA Approves Texas GHG Transition Plan

Also on February 4, EPA approved the transfer of pending GHG permit applications to the TCEQ for final processing. By May, each applicant will have to decide whether EPA will continue as the GHG PSD permitting authority or the application will be transferred to the TCEQ for final processing. This decision will be difficult because of uncertainties about permit processing timelines. The TCEQ will not have authority to issue GHG permits until 30 days after the EPA FIP removal is published in the *Federal Register*, which is not expected before June. For more information, contact Karen Olson at 512.879.6618 or kolson@zephyrenv.com.

Fish and Wildlife Service Approves Comal County Regional Habitat Conservation Plan

On January 17, USFWS approved the Comal County Regional Habitat Conservation Plan and associated incidental take permit for Comal County in Central Texas. The plan includes measures to minimize and mitigate incidental take of the golden-cheeked warbler and black-capped vireo associated with proposed road construction, maintenance, and improvement projects; utility construction and maintenance; school development and construction; public or private construction and development; and land clearing. Issuance of the 30-year permit will enable Comal County to continue expanded development while preserving both the golden-cheeked warbler and black-capped vireo and their habitat. For more information, contact Bob Fisher at 281.668.7349 or rfisher@zephyrenv.com. ❀

FROM THE PRESIDENT

Happy Birthday to Us!

Twenty years ago (April 19, 1994) was the founding of Zephyr. Our five founders, Patrick, Art, Celeste, Jeanne, and David got together and decided to build a better “consulting mousetrap.” Each of them had worked at much larger firms during their careers, and each had the idea that there was a place for a new environmental consulting firm, dedicated to technical excellence and responsive service. Apparently the odds are stacked against the long-term survival of a new business; only 35 percent of new American businesses survive to their tenth year, and less than 25 percent survive for fifteen years. Those ratios apply in our industry too — of the top 60 firms listed in the Engineering News Record in 1991, only 37 percent have survived to this day — the rest have been sold, gone bankrupt, or otherwise disappeared.

In spite of the odds, the fullness of time has borne out our founders’ vision. We think we’ve kept the best parts of their original vision in our culture — technical excellence, responsiveness, and “consulting for fun and profit” for the employee owners. But many things have changed for us in twenty years too! From the five original employees, we’ve grown to 75 people. From the original office space next to a fish wholesaler, we’ve grown to offices in three cities and worked in almost every state and a number of countries overseas. We’ve performed over 5,100 projects and served many hundreds of clients. Even though our employee turnover is low, in twenty years 219 people have worked here and been part of building their careers, their client relationships, their friendships with colleagues, and their futures.

We’ve always been an employee-owned firm, and in 2010 we re-committed to the employee ownership model with the implementation of an ESOP — an “employee stock ownership plan.” In addition to some employees owning shares of the company directly, ESOP participants also have a beneficial ownership stake in the firm. In the July 2013 edition of *Currents*, I reported that Zephyr had won an award as “A Best Firm to Work For.” In that article, I said “We fully recognize that the trust that our clients place in us to help them meet their objectives is the foundation of our growing business.”



The benefit to our clients from our business model is clear — at Zephyr, our clients work with a group of talented employee-owners who are highly invested in the business; it’s not “just a paycheck” to us. We very much appreciate our clients’ business and the opportunities to grow in our careers.

When I compare notes with friends and colleagues who work at other places, it reinforces my feeling of how fortunate we are — our founders acted on a dream twenty years ago, and we are still busily “building the dream” today. I’ll finish by thanking our clients, and the 219 people who helped to create, and many of whom are still creating, a future for all of us at Zephyr. Please see my companion article, in which I interview three of Zephyr’s founders so you can hear from them directly! ✨

Joe Zupan
President

Zephyr is a full-service environmental, health, and safety firm offering consulting, training, and data systems services to clients worldwide. We specialize in air and water quality, waste management and cleanup issues, incident management, natural resources, and workplace and community safety.

Currents is published quarterly by Zephyr Environmental Corporation, is edited by David Cabe of Cabe Environmental Solutions, and designed by Allen Griffith of Eye 4 Design. Current and past issues of this newsletter are available at our website. For more information about *Currents*, or to add your name to our subscription list, please email: currents@zephyrenv.com or visit www.zephyrenv.com.



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violation of national air quality standards. Emissions from projects that are calculated to exceed regulatory limits are required to be offset by mitigation techniques or the use of emission reduction credits (ERCs).

The second category of emissions of concern for seaports are operational emissions, both landside and seaside. The first step in addressing these emissions is the preparation of an emissions inventory (EI) of air pollution sources at the port, including ocean going vessels, harbor craft, cargo handling and conveyance equipment, rail operations, and heavy duty trucking. In addition to helping the port better understand its operational emissions, the EI helps the port's tenants and the community affected by its emissions to prioritize emissions reduction efforts and provides a baseline for tracking progress in reducing air pollution. Air pollution EIs can also become the basis for regional and local scale air quality modeling, greenhouse gas studies, regulatory impact assessments, and human exposure modeling.

Other regulatory drivers restrict emissions from seaport operations. Some states require that stationary air pollution generating equipment at ports undergo minor new source air quality permitting or, at the very least, qualify for exemptions from permitting. Emissions from new port facilities dedicated to serving large industrial projects that are subject to major new source air quality permitting reviews may have to be evaluated in the permit reviews for these projects. In addition, many states have imposed restrictions on the operations of ships

and vehicle fleets (e.g., limitations on idling times). EPA has also adopted the International Maritime Organization (IMO) requirements that provide timelines for aggressive emission reductions of a variety of pollutants including sulfur oxides, nitrogen oxides, and particulate matter. And IMO has adopted mandatory energy efficiency measures to significantly reduce the amount of carbon dioxide emissions from international shipping and issued standards to reduce emissions of air pollutants in defined sea areas around the globe, including coastal waters of the U.S. (see related article in the October 2009 issue of *Currents*).

Seaports are essential to our nation's economic health and approaches to protecting the air quality must continue to ensure the economic viability of our port facilities. At the same time, air pollution emissions from seaports can negatively affect the economy; the proximity of ports to major industrial areas such as Houston, Los Angeles, and Baltimore contribute to the inability of these areas to fully meet the air quality standard for ozone, resulting in limitations on economic expansion. However, with the partnership of port stakeholders — including community groups, local governments, terminal operators, shipping carriers, and regulatory agencies — the mutually beneficial goals of environmental protection and economic growth are within our grasp. ✨

Robert P. Newman
Principal