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# Currents

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## U.S. and Canada Battening Down the Hatches on Ship Emissions

**A**s pollution from land-based stationary sources, cars, and trucks has been more tightly controlled over the last 40 years, the contributions of ships and port operations to air pollution in coastal areas have become more important. In the same period, foreign trade has grown dramatically; thus, pollution from shipping and port operations has been growing as a percentage of total emissions from all sectors. Ocean-going vessels dock at more than 100 coastal and Great Lakes ports in the United States, 40 of which are located in metropolitan areas that do not meet federal air quality standards. In many port cities, ships are now among the largest sources of air pollution — sulfur oxides (SO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>), and particulate matter (PM), in particular.

Because shipping takes place on the high seas, away from populations who can readily see the very visible emissions, regulation of these sources has lagged behind other classes of mobile sources (i.e., cars, trucks, and locomotives). Land-based mobile sources run on distillate fuels, while most ocean-going vessels run on bunker fuel, which is cheaper than distillate, but also more polluting. And, while recent U.S. and European air quality regulations are driving distillate fuels to become cleaner over time, the sulfur removed from this class of fuel ends up in the residual fuels used by ships that dock at ports along U.S. shores. Surprisingly, the typical fuel used by ocean-going ships contains almost 2,000 times more sulfur than would be allowed for trucks operating on U.S. roads.

Recent risk assessments conducted for the largest U.S. ports have highlighted the potential health concerns associated with ship emissions. In particular, studies report that more than 700 premature deaths are caused each year in the Los Angeles-Long



Beach areas by ship emissions. Other studies have projected that the number of premature deaths from ship emissions could rise by 40 percent in the next five years because of increases in shipping activity.

### THE U.S. AND CANADIAN RESPONSE

In March 2009, the U.S., together with Canada, submitted a proposal to the International Maritime Organization (IMO) to require stringent international emission controls for ocean-going ships operating in their coastal waters. In particular, the U.S. and Canadian governments co-proposed to designate specific portions of the countries' coastal waters (out to 200 nautical miles, but not into sovereign waters of adjacent nations) as an "Emission Control Area", or ECA, where significant reductions in NO<sub>x</sub>, SO<sub>x</sub>, and PM emissions would be required.

### HOW DOES THE IMO REGULATE SHIP EMISSIONS?

Marine vessel pollution is regulated by the International Convention for the Prevention of Pollution from Ships. The Convention, more commonly known as MARPOL (for MARine POLLution), arose out of the efforts of the IMO in

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# FROM THE TRENCHES

## Performing Phase I ESAs: The Trouble with Devils and Orphans

In thinking of what it takes to perform a Phase I Environmental Site Assessment (ESA) that meets the ASTM E 1527-05 standard and EPA's "all appropriate inquiry" (AAI) rule, we are reminded that "the devil's in the details". And, thanks to the increasing use of the internet and electronic recordkeeping by regulatory agencies, the sheer volume of details about sites has expanded exponentially.

Apart from the voluminous increase in information to review, probably the most challenging aspect of ESAs is that, in our many years of environmental experience, we have never heard a client say, "I need you to perform an ESA, but I'm in no rush to get it done." For some reason, ESAs are always last-minute items that must be completed by next week! An aggressive schedule like this, however, creates a conundrum — the ASTM standard defines the term "reasonably ascertainable" information as that which can be reasonably compiled within 20 days from the date that the written or verbal request is made, but our clients' deadlines rarely allow that much time.

Even now, parties requesting ESAs for properties are often unfamiliar with the levels of detail and inquiry that are required. In part, this is because, prior to 2006, the environmental professionals who conducted the ESAs did not have to meet any particular requirements. And, prior to 2002, there was no requirement to adhere to any standard practice or rule when performing these assessments. Furthermore, before 1997 there were no written standards or rules available at all; when ASTM E 1527-97 was issued in 1997 it was the first form of guidance for preparing ESAs.

We were recently hired to conduct a series of ESAs for investors in several power generating facilities in Maine. Imagine our chagrin to find an over-abundance of data generated by a strict regulatory program that keeps track of every release of home heating oil (in some cases less than one gallon) in a state with many thousands of household heating oil tanks. We had to plow through hundreds of pages of print-outs recording these heating oil releases in order to zero in on the very few that had the potential to affect the sites we were investigating.

Many sources of data are available for industrial sites — some even dating back to the 19th Century. For example, the "Sanborn Maps", which were initially produced for the fire insurance industry and date back to 1867, provide abundant detail about the locations and footprints of buildings, streets, and other physical features in urbanized areas. Also, USGS maps dating back to the early 1900's can help to identify land use activities. And, by the



1930's, aerial photographs had been taken of most sites that were later to become the focus of ESAs.

The review of what, at first glance, might seem like outdated information, can be critical to an ESA - many structures and land uses shown on these maps and which may have contributed to historical site contamination, may no longer exist. And, in the absence of visual signs of these former structures or activities, it would be otherwise impossible to discover and assess a potential issue. For example, in a recent Zephyr site assessment our review of the Sanborn maps showed that four aboveground diesel storage tanks had once been present at the site. Today, however, this area is paved with asphalt, and we could find no records related to the closure of the tanks. Upon interviewing key site property managers, we learned that contamination of the former tank area from diesel fuel releases had been remediated, even though neither the current owner nor the state agency had any records of the clean-up.

Of all of the activities in preparing ESAs, we receive the biggest surprises when scrutinizing government records. Typically, a records package runs to about 200 pages. However, there are those properties located in highly industrialized areas with long histories for which records packages of over 2,400 pages must be reviewed, even before associated "orphan sites" are included. "Orphan sites" you ask, "what are those?" Simply put, these are sites that may be somewhere in the general vicinity of the area for which the ESA is being performed, but which cannot be pinpointed from the information available. We must review every orphan site record and make a reasonable attempt to determine if the orphan may have affected the property of interest. In the old days, there was little information about the orphans, and

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## EPA's Proposed New "Tailoring Rule": Cleaning up the "Glorious Mess" by Turning Off the Lights

In 2008, Congressman John Dingell famously warned of a "glorious mess" were EPA to begin regulating "greenhouse gases" (GHGs) under the Clean Air Act. EPA has begun: Its pending proposal to regulate GHG emissions from cars will be EPA's first to limit emission of the pollutant called "greenhouse gases," adding it to the pantheon of "air pollutants" subject to CAA stationary source permitting requirements. And so, although these rules, which are expected to be finalized by the end of March 2010, will directly regulate "only" car makers, their adoption will trigger regulation of a great many stationary sources. Just how many is to be determined.

The Clean Air Act sets specific applicability thresholds for both its pre-construction (PSD) and operating (Title V) permit programs, none higher than 250 tons per year of any air pollutant emitted. But at these thresholds, EPA expects that permitting authorities would receive approximately 40,000 PSD permit applications each year — currently, they receive around 300 — and they would need to issue Title V permits for approximately six million sources, as opposed to their current inventory of 15,000. The resultant strains on both the regulators and the regulated are self-evident. And so on September 30, 2009, EPA proposed a rule to — in effect — "tailor" the Clean Air Act itself to raise the major source thresholds, for GHGs only, from 250 tpy to 25,000 tpy to limit the universe of sources subject to GHG-triggered NSR and Title V review to a manageable level. This rule would clean up the "glorious mess" by simply turning off the lights.

The Tailoring Rule offers two self-justifications for reading out of the statute some very specific directives. The first is the rule of statutory construction that allows an interpretation at odds with the literal language of a statute if the literal language would lead to an absurd result. The Tailoring Rule preamble goes on at length to conclude that Congress wouldn't have intended to overwhelm either the PSD or Title V permit programs for relatively little gain, a result EPA finds "absurd" enough to conclude that Congress didn't intend to apply the 250-ton threshold to GHGs. But there is nothing inherently absurd about making a beneficial regulatory program applicable to the widest array of sources, and so if Congress had intended GHGs to be subject to PSD permitting at all, the more the merrier. Of course, the real reason EPA is "tailoring" is not because it makes sense to apply PSD and Title V review to sources of CO<sub>2</sub> emissions, but because it does not.

A second escape from statute is the doctrine of "administrative necessity." Applying this doctrine, EPA concludes that its decision to set thresholds orders of magnitude higher than Congress intended would be excused by a reviewing court, simply because



compliance with the specific thresholds in the statute would have been administratively difficult. But the difficulty of the statutorily assigned task cannot be a basis to write it out of the statute, or the Clean Air Act would be quite bare: EPA has met very few of its obligations as directed by the Act.

The five justices deciding *Massachusetts v. EPA* — which found GHGs to be "air pollutants" within the coverage of the Clean Air Act — declined to consider any tools of statutory interpretation to determine Congressional intent because the definition of "air pollution" was so "unambiguous." In the inevitable challenges to the Tailoring Rule, the reviewing court will be asked to find ambiguity in a far clearer definition ("major emitting facility") to avoid seemingly absurd results. No honest reader could find more ambiguity in the definition of "major emitting facility" than in that for "air pollution," and so which should give way? Is it more absurd to apply the PSD thresholds to GHGs or to put GHGs into the PSD program (or the rest of the Act) in the first place?

Given D.C. Circuit and Supreme Court tendencies to respect literal language, it seems more likely than not that the Tailoring Rule will not survive. And in the process the appellate courts will have a chance to reconsider *Massachusetts*, this time squarely faced with competing absurdities. At the time it heard *Massachusetts*, the

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# News Briefs

## national news

### **EPA to Categorize and Regulate CO<sub>2</sub> as an Air Pollutant**

On September 1, EPA announced its intention to finalize, in the near future, its proposed findings that greenhouse gases, including CO<sub>2</sub>, endanger the public health and welfare, and that greenhouse gases from new motor vehicles contribute to the threat of climate change. These findings were developed as one of EPA's responses to the Supreme Court's 2007 decision that EPA must ground its reasons in the Clean Air Act (CAA) for action or inaction regarding regulating greenhouse gases. As a consequence of the proposed findings, EPA is now drafting a proposed rule that would regulate greenhouse gas emissions under the CAA. For more information, contact Roger Brower at 410.312.7907 or [rbrower@zephyrenv.com](mailto:rbrower@zephyrenv.com).

### **EPA Finalizes Greenhouse Gas Reporting Rule**

In a related action, on September 22, EPA finalized its national greenhouse gas (GHG) reporting rule, originally proposed in April. Although the stated purposes of the rule are solely informational in nature, the rule codifies detailed protocols for monitoring and reporting of GHG emissions from particular source categories. Beginning in January 2010, affected sources of GHG emissions will need to comply with applicable source protocols and report GHG emissions annually. The final rule includes several major changes from the proposal, aimed at reducing the burden on the regulated community; reporting has been deferred for several source and supplier categories, monitoring options and flexibility have been added, and reporting exemptions have been added for certain types of combustion units. For more information, contact David Mahler at 410.312.7909 or [dmahler@zephyrenv.com](mailto:dmahler@zephyrenv.com).

### **EPA and DOT Propose Limits on Vehicle Emissions**

On September 15, EPA and the Department of Transportation proposed rules that would require model-year 2016 passenger vehicles to meet a combined average emission level of 250 grams of CO<sub>2</sub> per mile. The proposed rules, which cover model years 2012 through 2016, would require automobile manufacturers to build a single, light-duty vehicle fleet that satisfies all federal requirements as well as the standards of California

and other states. The proposed program includes miles-per-gallon requirements of the National Highway Transportation Safety Administration's corporate fuel economy standards and the first-ever national emissions standards under EPA's greenhouse gas program. For more information, contact Louisa Roux at 512.879.6646 or [lpreston@zephyrenv.com](mailto:lpreston@zephyrenv.com).

### **EPA to Reconsider Ozone Standards**

On September 16, EPA announced plans to reconsider the 2008 air quality standards for ground-level ozone. The 2008 standards were set at 0.075 parts per million (ppm) averaged over eight hours, despite a recommendation by EPA's Clean Air Scientific Advisory Committee for standards within the range of 0.06 ppm to 0.07 ppm. Several states, environmental groups and industry groups filed petitions with the D.C. Circuit Court of Appeals challenging the 2008 standards, and in March, the Court granted a request by EPA to stay the litigation pending EPA's reconsideration of the standards. The September announcement includes a schedule to propose reconsidered standards by December 2009 and to issue a final decision by August 2010. In the interim, EPA will stay the 2008 standards for the purpose of designating ozone nonattainment areas, but will continue to require permitting of new and modified sources under the Prevention of Significant Deterioration (PSD) program based on the 2008 standards. For more information, contact David Mahler at 410.312.7909 or [dmahler@zephyrenv.com](mailto:dmahler@zephyrenv.com).

### **EPA to Revise Rules for Wastewater Discharges from Power Plants**

On September 15, EPA announced plans to revise its effluent limitations guidelines for power plant wastewater discharges. The proposed changes are based on the results of a multi-year study indicating that the level of toxics discharged in coal-fired power plant wastewaters will increase significantly as new air pollution controls are installed. The study found that toxic-weighted pollutant loadings for these facilities are driven predominantly by metals present in the wastewater resulting from ash handling and wet flue gas desulfurization systems. EPA plans to release a final study report later this year. For more information, contact Robin Cosgrove at 512.879.6623 or [rcosgrove@zephyrenv.com](mailto:rcosgrove@zephyrenv.com).

### **EPA Risk Assessment Findings Could Mean Tighter PM Standards**

As part of its current review of the air quality standards for particulate matter (PM), EPA, in July and September, released drafts of supporting studies that ultimately will support a final decision about whether to retain or revise the primary and secondary PM standards. EPA anticipates issuing its draft policy assessment (complete with conclusions and recommendations) in early 2010 for review by the Clean Air Scientific Advisory Committee and the public. Initial review of the draft studies indicates that EPA may propose to tighten standards. For more information, contact Lou Corio at 410.312.7912 or [lcorio@zephyrenv.com](mailto:lcorio@zephyrenv.com).

### **EPA Proposes to Revise Emissions Standards for Marine Engines**

In June 2009, EPA proposed more stringent emission standards for the largest marine diesel engines used to propel oceangoing vessels. Beginning in 2016, the standards would require the use of high efficiency after-treatment technology, such as selective catalytic reduction, to achieve NO<sub>x</sub> reductions of 80 percent from current levels for U.S.-flagged/registered vessels and would limit emissions of hydrocarbons and carbon monoxide. Also, EPA would forbid the production and sale of marine fuel oil with a sulfur content of greater than 1,000 ppm for use in large (Category 3) engines. EPA's proposed standards are similar to the recently-revised international standards for marine engines. For more information, contact Lou Corio at 410.312.7912 or [lcorio@zephyrenv.com](mailto:lcorio@zephyrenv.com).

### **EPA Extends PSD Grandfathering of Fine Particle Emissions**

In September, EPA extended until June 22, 2010 its administrative stay of the "grandfathering" provision for particulate matter less than 2.5 micrometers (PM<sub>2.5</sub>) in the PSD permitting program. In May 2008, EPA added the grandfathering provision to the PSD regulations as part of its final rule for implementing new source review (NSR) for fine particulate matter. However, in response to an Earthjustice petition, EPA, in April, agreed to reconsider several provisions of the final rule, resulting in an extension of the administrative stay by three months (effective June 1). The second and most recent extension of this stay is meant to provide adequate time for EPA to propose, take public comment on, and issue a final action on the repeal of the grandfathering provision. For more information, contact Lou Corio at 410.312.7912 or [lcorio@zephyrenv.com](mailto:lcorio@zephyrenv.com).

### **EPA Proposes NESHAPs for Chemical Preparations Industry Area Sources**

On August 5, EPA proposed new hazardous air pollutants standards for area sources in the chemical preparations industry. The proposed NESHAP would apply to both new and existing manufacturing operations located at an area source that produces chemical preparations by mixing, milling, blending and/or extruding chemical compounds containing target HAPs. The proposed standards impose particulate matter control device efficiency requirements and require continuous monitoring,

periodic inspections, and semi-annual compliance summary reporting. For more information, contact Shahjabeen Hashim at 281.668.7359 or [shashim@zephyrenv.com](mailto:shashim@zephyrenv.com).

### **Suffering Superfund Site Statistics Spur Spending Scrutiny**

According to an August 10 report by the Associated Press, EPA budget documents and records reveal that the agency expects to begin the final phase of cleanup at fewer Superfund sites than under any presidential administration since 1991. EPA estimates it will finish construction to remove the last traces of pollution at 20 sites in 2009 and 22 sites in 2010. In the past, EPA has completed construction at an average of 38 sites per year. The Obama administration is looking at reinstatement of a petroleum tax in 2011 to increase funding while the EPA is looking for new ways to measure Superfund progress. For more information, contact David Sorrells at 512.879.6626 or [dsorrells@zephyrenv.com](mailto:dsorrells@zephyrenv.com).

## **state news**

### **EPA Proposes to Disapprove Multiple Texas SIP Changes**

On September 8, EPA announced its intention to disapprove specific sections of the Texas Implementation Plan (SIP) related to 1) streamlining the federal NSR air permitting process for major sources and modifications, 2) the TCEQ's flexible permitting program, and 3) the TCEQ's program for permitting changes to "qualified facilities". Although various reasons were given for proposing these disapprovals, EPA's underlying concern with each of these components of the Texas SIP is that the rules do not clearly prohibit sources from circumventing required major source NSR. For more information, contact David Cabe at 512.879.6644 or [dcabe@zephyrenv.com](mailto:dcabe@zephyrenv.com).

### **Governor Appoints New TCEQ Commissioner and Chairman**

With the August 31 expiration of Larry Soward's term as TCEQ Commissioner, Governor Perry has appointed Carlos Rubenstein to fill the vacancy — an appointment which will not come up for Senate confirmation until 2011. Rubenstein was formerly deputy executive director of the TCEQ, assisting the executive director with operations, budget oversight, legislative activities, and policy implementation. In addition, he served and will continue to serve on various committees dealing with Texas border activities. In a related move, on September 10, the Governor appointed Commissioner Bryan Shaw as Chairman of the three member commission, replacing Buddy Garcia, who will continue to serve as a Commissioner. For more information, contact Ed Fiesinger at 281.668.7353 or [efiesinger@zephyrenv.com](mailto:efiesinger@zephyrenv.com).

### **TCEQ Revises State Version of CAIR Rule**

On September 9, the TCEQ revised regulations for implementing the Clean Air Interstate Rule (CAIR) to 1) incorporate changes in CAIR regulations since 2006, and 2) authorize a change in

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the methodology for calculating CAIR Phase II NO<sub>x</sub> emission allowance allocations for affected electric generating units beginning in 2015. Texas is required to request a SIP revision from EPA by early 2010 in order to receive approval for the proposed changes prior to the affected CAIR control periods. For more information, contact Curtis Harder at 512.879.6643 or [charder@zephyrenv.com](mailto:charder@zephyrenv.com).

#### **NRG Plans Carbon Capture Project near Houston**

On September 1, NRG Energy announced its application to the Department of Energy's Clean Coal Power Initiative program for funding to build a carbon capture research and demonstration unit at the W.A. Parish Power Plant, located southwest of Houston. The demonstration unit, which would begin operating in 2013 and use technology developed by Fluor Corporation, will be designed to capture 90 percent of the carbon dioxide (or about 500,000 tons per year) from a portion of the Parish Plant exhaust gases. The captured greenhouse gases will be compressed and sold to oil producers for enhanced oil recovery. For more information, contact Brett Davis at 512.879.6628 or [bdavis@zephyrenv.com](mailto:bdavis@zephyrenv.com).

#### **EPA Approves Changes to TCEQ Engine and Turbine Monitoring Rules**

On July 31, EPA approved revisions to the TCEQ's Chapter 117 NO<sub>x</sub> rules for reciprocating internal combustion engines and turbines in the Beaumont-Port Arthur and Houston-Galveston-Brazoria ozone nonattainment areas. The revisions provide an alternative to the use of totalizing fuel flow meters for monitoring NO<sub>x</sub> emissions, allowing companies to use systems that continuously monitor horsepower and operating hours. In addition, they require that companies maintain written or electronic records of the average daily horsepower and total daily operating hours for five years. The rule changes went into effect on September 29. For more information, contact Doug Jordan at 281.668.7352 or [djordan@zephyrenv.com](mailto:djordan@zephyrenv.com).

#### **TCEQ Proposes Changes to Dallas/Fort Worth and Houston Area Clean Air Plans**

On September 23, the TCEQ proposed revisions to portions of its Chapter 101, 115, and 117 rules related to attaining the 1997 eight-hour ozone standard. The packages contain measures to 1) expand the applicability of Chapter 115 to cover more offset lithographic printing operations and further limit the VOC content of cleaning solutions used by these operations in the DFW and Houston area; 2) stabilize the Houston area NO<sub>x</sub> emissions cap through rejection of additional Form ECT-3 requests for allowance allocations; 3) reduce the total cap amount of HRVOC allowances for the Houston area by 25 percent by 2017; and 4) set aside 250 tons of HRVOC emissions to be solely dedicated to covering emissions from emissions events in the Houston area. The Houston rule package also includes a commitment by the Houston-Galveston Area Council for NO<sub>x</sub> emissions reductions under the Voluntary Mobile Emission Reduction Program of 2.25 tons per day.

For more information, contact Ed Rapier at 512.879.6649 or [erapier@zephyrenv.com](mailto:erapier@zephyrenv.com).

#### **TCEQ Releases Draft Flare Task Force Report**

The TCEQ released its draft Flare Task Force Report at stakeholder meetings on September 18 and 21. The Flare Task Force was appointed to address concerns raised about the correct reporting of emissions from flares and concerns by EPA that flaring is not good air pollution control practice. The report lays out broad recommendations for 1) increased monitoring of flare operating parameters, 2) increased emphasis on flaring minimization plans, 3) additional evaluation of flare operations and control through the permitting process, and 4) continued stakeholder involvement and public outreach. Following receipt of comments, the report will be submitted to the executive director. For more information, contact Ed Fiesinger at 281.668.7353 or [efiesinger@zephyrenv.com](mailto:efiesinger@zephyrenv.com). ✨

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most of them were summarily dismissed. But, now that we're living in the internet age, the "Detail Devil" provides abundant (i.e., copious, i.e., overwhelming, i.e., redundant, i.e., "drinking from a fire hose") information regarding every orphan; thus a multitude of orphans must be fully evaluated to determine whether they are truly homeless or if they need to be adopted into our assessment.

And so it is that after having reviewed mountains of site details, finding homes for countless orphans, and striving to meet project deadlines, that your hapless environmental professionals feel like we have beaten the devil at his own game upon completion of an ESA, not to mention the associated pride when we meet our client's budget and (often) aggressive schedule. ✨

**David Sorrells**  
Senior Project Engineer  
**Paul Moore**  
Project Hydrogeologist

#### **perspective >>> continued from page 3**

Court was convinced it was deciding only that EPA had to make an endangerment finding for cars, one way or the other. The Tailoring Rule may have the benign effect of illuminating the messes that *Massachusetts* created.

This article is intended for educational and informational purposes only and does not constitute legal advice or service. A longer, more in-depth version of this article is available at <http://www.velaw.com/resources/EPAsProposedNewTailoringRule.aspx>. ✨

**Eric Groten and Patrick Lee**  
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# FROM THE PRESIDENT

## America's Newest Pollutants

In my April 2009 column (see “New Directions at the EPA — The ‘Jackson Five’”), I noted that the Obama administration and the new EPA administrator, Lisa Jackson, had made reduction of greenhouse gas emissions a priority. Just five months later, on September 22, EPA issued its final greenhouse gas monitoring and reporting rule, requiring perhaps as many as 10,000 facilities to quantify their emissions of greenhouse gases (GHGs) and to start reporting them in early 2011. It’s expected that this rule will cover approximately 85 percent of the nation’s GHG emissions.

Some industry groups had asked EPA for a year-long delay in implementing this rule (i.e., begin GHG monitoring in 2011 and begin reporting in 2012); however, EPA didn’t budge. Therefore, regulated facilities only have about three months to prepare for the monitoring, which must begin January 1, 2010. This aggressive deadline will be particularly challenging for those facilities that must install or modify continuous emission monitoring (CEM) equipment — in recognition of this fact, EPA is allowing such facilities to continue, through March 2010, using the best techniques they currently have available to monitor and quantify GHG emissions.

While the rule does not impose any obligation to reduce GHG emissions, it’s likely that, as with other reporting rules such as the Toxic Release Inventory (SARA 313), facilities reporting GHG emissions will begin to manage their measured emissions. In other words, once companies must publicly report their emissions, they may start to invest in ways to reduce them.

Most of us working in the engineering and environmental sciences fields have always considered carbon dioxide (CO<sub>2</sub>) to be simply the end result of combustion and biological processes rather than a “pollutant” in its own right. But a new era has clearly arrived. If you have the need to “come up the curve” quickly, the following bullets summarize “everything you need to know about greenhouse gas reporting but were afraid to ask.”

- Monitoring and measurement must begin January 1, 2010.
- The first report will be due to the EPA on March 31, 2011 and annually thereafter.
- Gases covered under the rule include carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, chloro-fluorocarbons, perfluorocarbons, and certain other fluorinated gases. For purposes of comparing emissions of the various gases



using a single unit, the emissions of GHG gases are expressed in terms of the mass of CO<sub>2</sub> emissions having an equivalent impact on global warming. The notation for CO<sub>2</sub> equivalent is “CO<sub>2</sub>e.”

- A broad range of facilities are covered by the rule, with detailed specifications regarding which facilities are required to measure and report GHG emissions; generally speaking, any industrial activity that is a defined “source category” or which generates more than 25,000 metric tons of CO<sub>2</sub>e per year of combined emissions must comply.
- EPA provided two options for quantifying GHG emissions: combined direct emission measurement and facility-specific calculations. Facilities that already have continuous emission monitoring (CEM) devices may elect to quantify emissions by the addition of a GHG measurement capability. Those that do not have such devices would have the choice of installing them or using facility-specific calculation methods.
- The information provided by the regulated facilities will be made available to the general public at a website developed by EPA.

EPA believes that this new reporting system will provide a better understanding of where GHGs are coming from and will guide development of the best possible policies and programs to reduce these emissions. For the regulated community it represents a significant new reporting requirement, although EPA contends that the data will also allow businesses to track their own GHG emissions, compare them to similar facilities, and provide assistance in identifying cost effective ways to reduce these emissions in the future. ✨

Joe Zupan  
President

Zephyr is a professional services firm providing worldwide consulting, training and data systems to the industrial, commercial and public sectors. The firm’s major areas of practice are air and water quality, waste issues, worker and community safety, and incident management.

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### *ship emissions >>> continued from page 1*

the 1970s to protect the environment from operational and accidental pollution from ships.

To date, close to 150 countries have ratified MARPOL. Six annexes to MARPOL cover various sources of pollution from ships (e.g., oil, air pollution, and sewage). Annex VI — Prevention of Air Pollution from Ships — regulates ship emissions of NO<sub>x</sub>, SO<sub>x</sub>, and PM through the establishment of standards for pollutant emissions and the sulfur content of engine fuel.

MARPOL Annex VI is a program that actually consists of two sets of standards to control emissions from ship engines. The general requirements, or global standards, apply to ships anywhere, at all times. In recognition that some areas may require further control, Annex VI also provides geographic-specific standards for ECAs. Ships operating in a designated ECA are required to comply with these stringent standards:

- Starting in 2015, fuel used by all ships in an ECA cannot exceed 0.1 percent fuel sulfur (1,000 ppm).
- Starting in 2016, new ship engines must use emission controls (e.g., selective catalytic reduction) that achieve at least an 80-percent reduction in NO<sub>x</sub> emissions.

(It is interesting to note that this past June, the EPA proposed a rule under the Clean Air Act that would set engine and fuel standards for U.S.-flagged vessels that essentially mimic these standards.)

### **HOW IS THE PROCESSING OF THE U.S.-CANADA ECA PROPOSAL GOING?**

This past July, at its initial meeting to discuss the U.S.-Canada proposed ECA designation, the IMO agreed in principle with the proposal. Formal voting for adoption by the parties to MARPOL Annex VI could come as early as March 2010. And if this schedule holds, the ECA could go into effect as early as 2012.

### **SO JUST WHAT ARE THE PROJECTED BENEFITS FROM ECA DESIGNATION?**

Studies conducted by the EPA in support of the ECA designation proposal show that the U.S. coastline and much of the interior of the country will experience significant improvements in air quality due to reduced PM and ozone precursor emissions from ships complying with ECA standards. This should especially help the Houston and Baltimore metropolitan areas, which have large port operations and have been addressing persistent ozone non-attainment issues for many years. For the U.S. and Canada combined, the ECA is projected to reduce NO<sub>x</sub>, SO<sub>x</sub>, and PM<sub>2.5</sub> emissions by 23 percent, 86 percent, and 74 percent, respectively, below current levels. EPA projects that as many as 8,300 lives will be saved and over three million people will experience relief from acute respiratory systems each year as a result of these reductions. ✨

**Lou Corio**  
Senior Air Quality Scientist