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JUNE 1995

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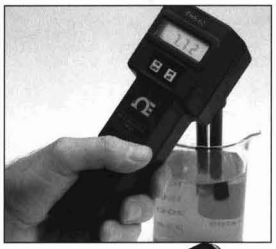

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   - D Provide professional consulting service on Pollution Control
   - E Provide staff environmental service on Pollution Control
   - Z Other (please specify) _____

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     - (21) Tobacco
     - (22) Textile
     - (23) Apparel
     - (24) Lumber & Wood
     - (25) Furniture
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     - (27) Print/Publish
     - (28) Chemicals
     - (29) Petrol. & Coal
     - (30) Rubber/Plastic
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   - C Agriculture
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   - F Govt. including municipal or district sanitary water or wastewater trmnt. sys. or plants

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   - H County
   - I State
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   - Z Misc. Services _____ (please specify)

3. Approximate number of employees at this address (check only one):
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   - B 20-49
   - C 50-99
   - D 100-249
   - E 250-499
   - F 500-999
   - G 1000-1499
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4. In your job function do you recommend, specify or purchase? (check all that apply):
   - A Pollution Control Equipment
   - B Instrumentation
   - C Chemicals
   - D Parts & equipment for maintenance operation and control
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   - F None of the above _____ (please specify)

5. What types of Pollution Control are you responsible for? (check all that apply):
   - A Air
   - B Water
   - C Noise
   - D Solid waste disposal
   - E Industrial hygiene
   - F Toxic & hazardous material
   - G Energy control/energy conservation
   - H None of the above _____ (please specify)

6. Which of the following publications do you receive personally addressed to you? (check all that apply):
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   - B Environment Today
   - C Hazmat World
   - D Pollution Equipment News
   - E The National Environmental Journal
   - F Water Environment & Technology
   - G None of the above _____ (please specify)

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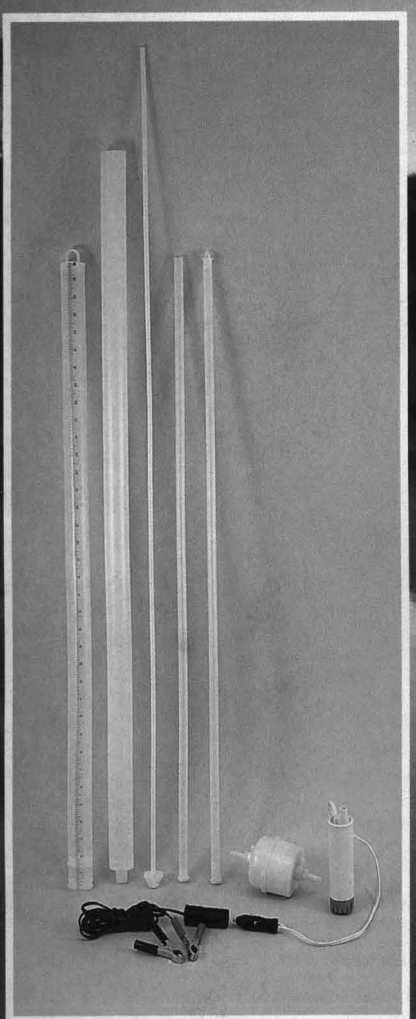

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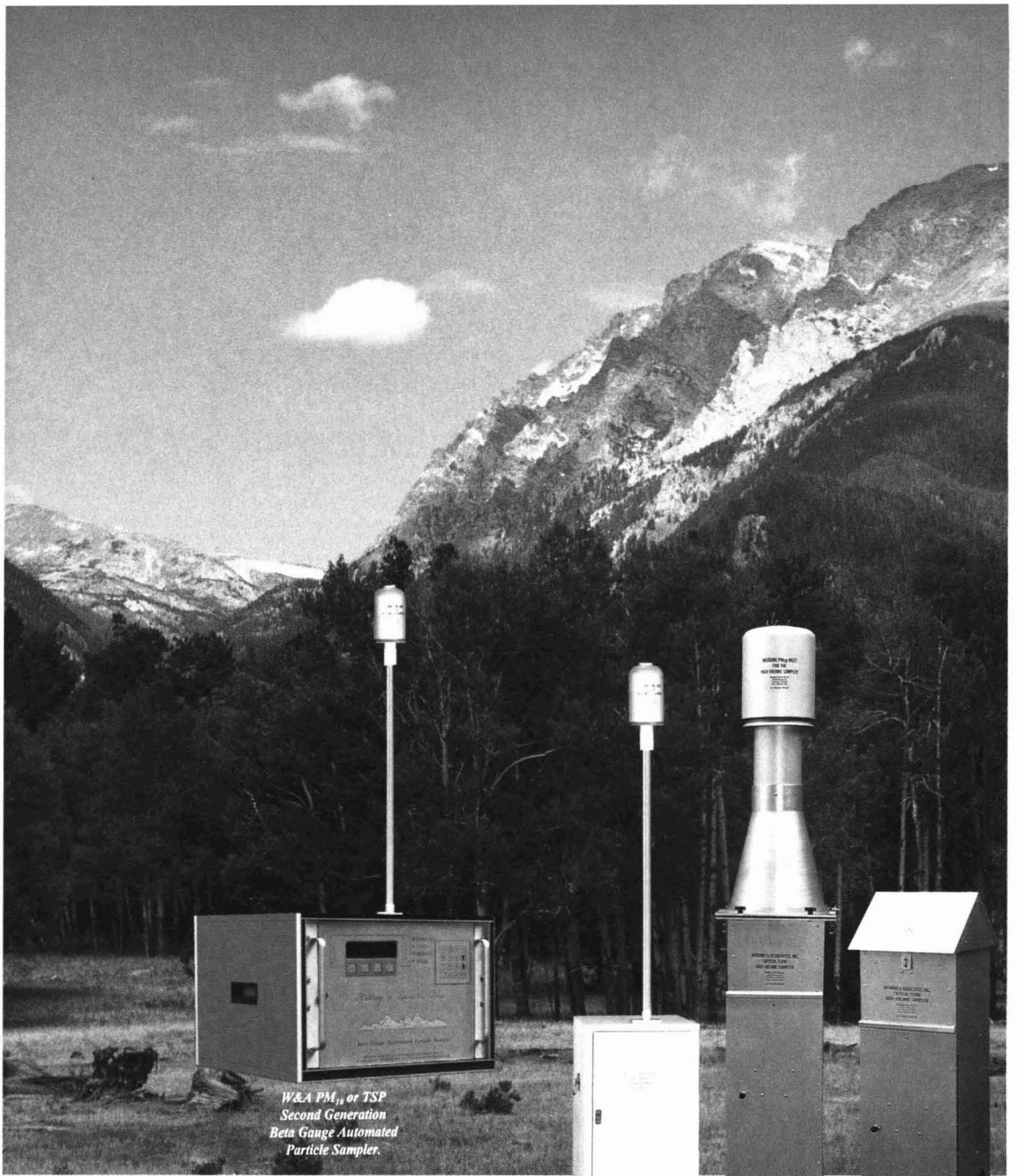

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Cover

Title V of the Clean Air Act poses some major challenges for industry. A five-part feature section (beginning on page 10) looks at strategies for taking the permitting program in stride.

Illustration by David Chestnutt.

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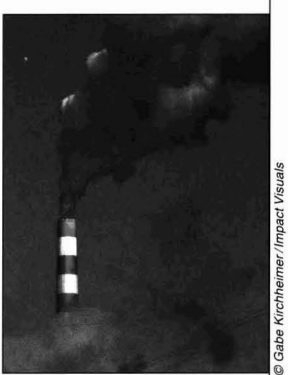

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Title V: A Job for Superheroes?

Facility environmental managers of all stripes face one of their greatest compliance challenges yet in the Clean Air Act's Title V permit program. The crown jewel of the Clean Air Act Amendments of 1990, Title V's stationary source permitting program pulls out all the stops in terms of scope, complexity and labor-intensive paperwork.

Indeed, just determining whether a plant falls into the permit program's major or minor source categories is a Herculean task: emissions sources must be inventoried and monitored, facility-wide emissions estimates must be derived, and recordkeeping and reporting tasks are enough to make a paper recycler salivate.

Few manufacturing sectors are spared the I-dotting and T-crossing, and even facilities that don't need a Title V operating permit must do the legwork to show they meet the cut-off criteria.

How comprehensive is Title V? Even wastewater treatment plants won't escape the maw of the permitting program. As consultant Jerry Bauer notes, wastewater treatment plant operators, accustomed to scrutinizing water quality, will have to train an eye skyward as they grapple with air compliance issues, many of them for the first time (page 21).

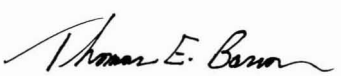
For many manufacturers, Title V calls for marshalling all their environmental management systems — from recordkeeping and reporting tools through process design and material use — in developing a strategy to manage the permitting rule. Precision casting company Dolphin Inc. provides a perfect example. The Phoenix-based firm, which makes Ping golf club heads among other products, put its emissions reduction efforts on a fast track in a successful effort to change its designation from major to minor source and avoid the headaches posed by a New Source Review (page 25).

Consultants are united in their advice to permit applicants: don't box yourself in with a permit application that leaves little room for flexibility and ample cause for regulatory scrutiny. Getting there, of course, is another matter (see page 15). In developing a permit application they can live with, environmental managers will have to pull out the crystal ball and predict the future — a task that might seem more natural to a stockbroker or psychic.

The flexibility issue — the extent to which manufacturers can modify their process and/or air emissions without triggering a New Source Review — continues to fuel debate at the highest ranks among EPA and industry representatives. The agency's latest attempt to broker a compromise, a new draft proposal to create a de minimis permit revision category, may help resolve the issue.

In the meantime, minor source classification is an enticing option — unless big expansion plans are on your agenda. Uday Patankar weighs the mixed blessings of a synthetic minor designation in an article beginning on page 31.

As if the compliance hurdle posed by Title V weren't enough of a challenge, many facilities are approaching their permit application deadlines with a "right-sized" environmental staff already burdened with myriad other compliance concerns. If ever an environmental regulation underscored the importance of a facility's environmental manager, Title V serves as a fresh reminder.



Thomas E. Barron
Editor-in-Chief

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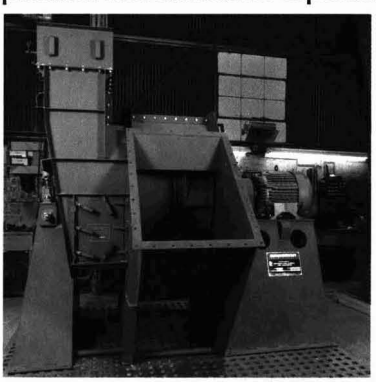

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NEWS UPDATE

Industry On TRI: Leave Us Out

EPA got an earful at a meeting last month on expanding the Toxics Release Inventory to include a variety of new industries.

The agency is considering adding categories outside the current list of Standard Industrial Classification codes. Those industries include waste management, utilities, airports, solvent recovery, mining, freight, and warehousing.

In deciding on the expansion, the public's right to know about chemical releases carries more weight than industry concerns about potential reporting and recordkeeping burdens, said Susan Hazen, director of EPA's Environmental Assistance Division, at the May 25 hearing.

To include the new industries, EPA may have to change the TRI *de minimis* exemption. That exemption allows facilities to not count toward TRI thresholds the amount of chemical present in a mixture if its concentration is less than 1 percent of the mixture. For OSHA carcinogens, the concentration has to be less than 0.1 percent of the mixture.

Industry representatives who spoke generally supported the current *de minimis* exemption and opposed adding their industry to TRI. They also said expanding the inventory could result in "double counting" of emissions. For example, if a facility ships hazardous waste containing TRI chemicals to a landfill, the shipment would already be counted as a "transfer" under TRI. "Why count it as a release?" asked Eli Eilbott of the Environmental Technology Council, which represents the hazardous waste management industry.

EPA hopes to issue a proposed expansion rule by early 1996, officials said.

Industry Speaks Out On Title V Permits

Frustrated by delays and rising costs associated with permit applications, corporate officials urged a congressional panel May 18 to give the states authority over Title V requirements.

Three industry representatives told the House Subcommittee on Investigations and Oversight that Title V is hurting industry's ability to compete.

Title V "is a seriously flawed program that needs major overhaul, if not repeal," said Charles Rentschler, president and CEO of Hamilton Foundry & Machine Co., which operates iron foundries in Ohio and Indiana. "Instead of Title V, we need to let the states' programs continue and provide latitude for business people to make production decisions that will shape our nation's future."

Rentschler also said Title V "doesn't make sense," in part because it fails to impose any new emission limits, but simply compiles data about a company's pollution record into one permit. Hence, the program "does nothing to produce clean air," he said.

Congress Eyes EPA For Deep Budget Cuts

EPA is facing significant cuts from a Republican Congress hunting for ways to balance the budget.

Congressional appropriators are trying to cut close to $1.5 billion in funding for agency programs in the current fiscal year. Most of that figure—$1.3 billion—is for the state revolving fund for drinking water projects. An EPA budget official said the agency had just been "sitting on" that money until Congress reauthorizes the Safe Drinking Water Act.

The agency's fiscal '96 budget request of $7.4 billion is also a likely target. The figure, up slightly from this year's budget, includes 10 percent more for personnel and 13 percent more for operating programs. EPA says it is trying to add personnel and cut its contracting budget to save costs.

"I must tell you, it will be impossible for this committee to agree to the level of spending EPA is proposing," said Sen. Christopher "Kit" Bond (R-Mo.), chairman of the Senate appropriations panel that has jurisdiction over EPA. "The very best this subcommittee can hope for in its budget allocation is a freeze at the fiscal year 1995 level—and even that level is optimistic."

EPA Administrator Carol Browner seemed unfazed by the chairman's assessment after appearing before congressional appropriators. "When you can get the committee to start at the level of [spending equal to] last fiscal year's final allocation, that's not a bad start," she quipped.

continued on page 61

New Stirrings in Environmental Markets

While still struggling, the environmental industry is showing some signs of bouncing back, according to management consultants Farkas Berkowitz & Co. The Washington, D.C.-based firm's latest "State of the Industry" report found new strength in several areas, including consulting, remediation construction, and water and wastewater services.

The market for air pollution control systems, predicted to be a fast grower as facilities keep pace with Clean Air Act requirements, expanded only 4 percent last year. However, air quality consultants enjoyed a banner year, with more than 20 percent growth, thanks to Title V. Continued growth at that rate is far from certain, cautioned market consultant Alan Farkas. "Congressional imposition of cost-benefit analysis for new rulemaking plus likely cutbacks in U.S. EPA's budget could constrain continuing growth in the air quality consulting segment," he warned.

Environmental consulting and remediation construction firms grew 9 percent in revenues and 30 percent in operating income last year, the consultants found. Revenues for vendors of water and wastewater goods and services were up 16 percent in a "highly mature" market, said coauthor Joan Berkowitz. The firm bases its estimates on indexes of companies in various sectors of the environmental market.

Distribution of 1994 $12.5 Billion Market for Environmental Consulting and Remediation Construction Among Market Segments

Field	1994 Market ($ Billions)	1994 Growth Rate	Outlook
Remediation Construction	3.0 (24%)	5-10%	Fair
Remediation Consulting	5.0 (40%)	0	Poor
Water Quality	3.0 (24%)	5%	Fair
Hazardous Waste	0.5 (4%)	0	Poor
Air Quality	0.5 (4%)	>20%	Good
Solid Waste	0.5 (4%)	0	Poor

Source: Farkas Berkowitz & Co.

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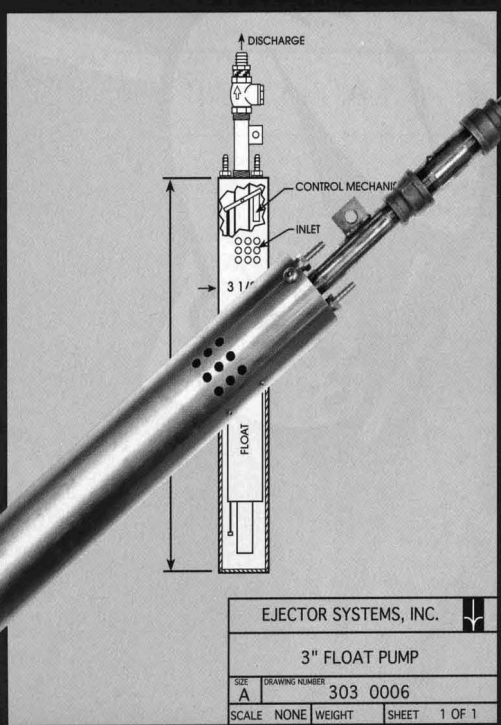

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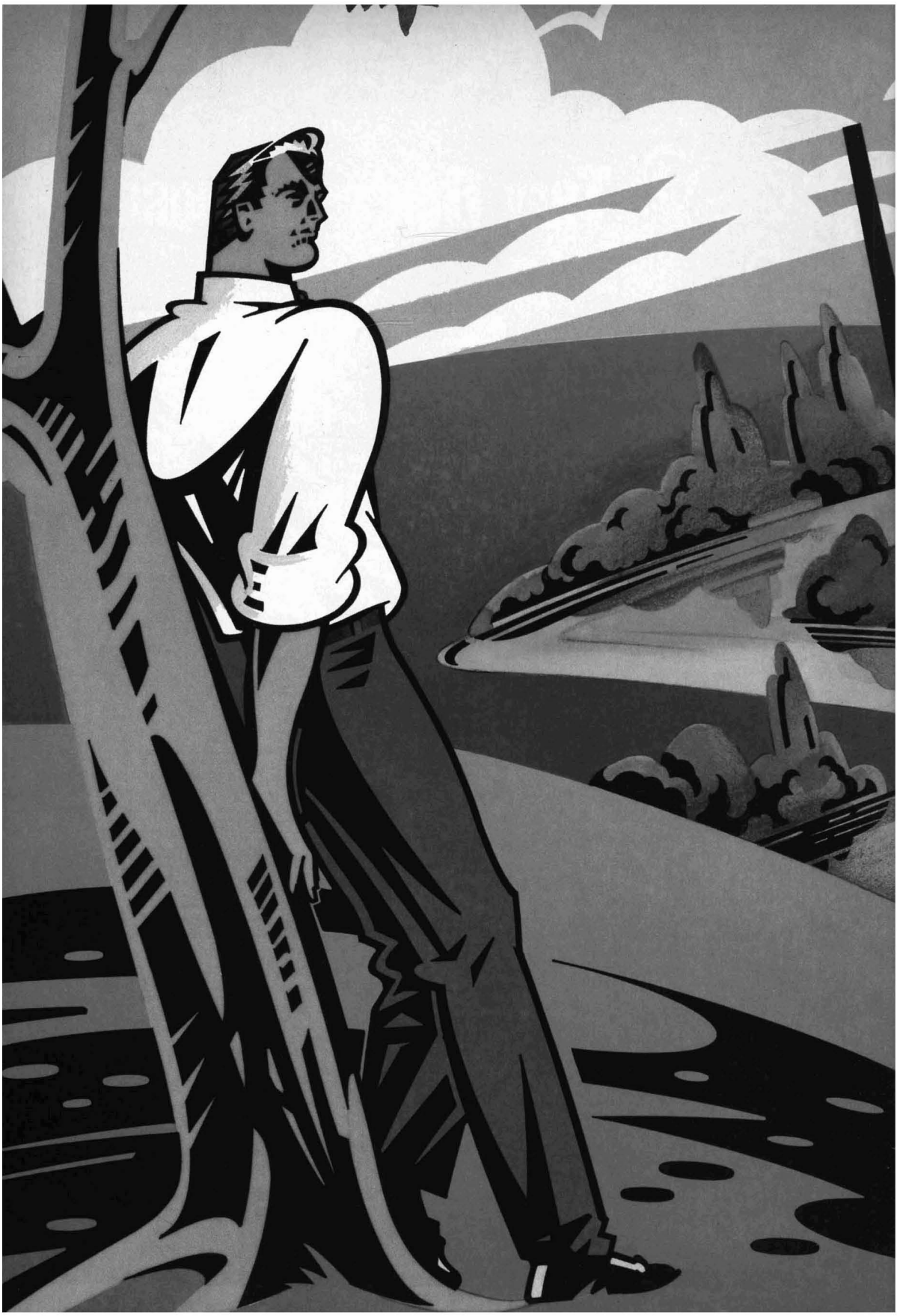

Illustration by David Chestnutt

BEYOND TITLE V

Long-Term Air Issues

Facility managers preparing to comply with Title V of the Clean Air Act know that its monitoring, recordkeeping and reporting requirements are enormous. Indeed, the Clean Air Act permitting program, now going into effect across the country, stipulates highly specific monitoring, recordkeeping, and reporting procedures a facility must follow. Added to those prescriptive requirements are sharpened enforcement teeth under Title VII. Particularly critical for future Title V permit holders are new potential penalties related to public disclosure.

Strictly speaking, there is no "beyond Title V." When EPA and the states issue new air quality regulations following adoption of the new permitting scheme, new compliance obligations will be incorporated into Title V permits.

But as they prepare their permit applications, facility managers would be wise to consider the post-application aftermath; that is, the likely repercussions from your application in terms of requirements and costs. The message: Don't let the information in your Title V application come back to haunt you!

Living With Your Permit

Under Title V, the reams of emissions information you must collect is an open-ended assignment. Although actual compliance certification will be annual, periodic/enhanced monitoring and other data must be collected on an ongoing basis. All data must be reported semi-annually to the agency, which, in turn, will make that information public.

In a real sense, you will be your own watchdog. If monitoring data indicate your facility is or has been out of compliance, you could be subject to citizen lawsuits—not to mention EPA enforcement actions. The best protection against self-incrimination is painstaking documentation. Should you exceed emissions limits as the result of a malfunction, for example, you should be armed with the data to prove that you were in full compliance with the startup, shutdown, and malfunction plans in your Title V operating permit.

Emerging Requirements

EPA has yet to promulgate Maximum Achievable Control Technology (Section 112(d)) standards for most source categories. If your facility is a major source of Hazardous Air Pollutants (HAPs) in a listed category, it is scheduled to be subject to a MACT standard between now and 2000. However, EPA admits it is far behind on issuing MACT standards and has proposed new

By Joseph Curreri

"MACT partnerships" in an attempt to meet its deadlines.

Even if you already hold a Title V permit when EPA designates MACT, the permit will be reopened if it is due to expire in three years or more. To comply with MACT will mean another application process and potentially costly monitoring, recordkeeping, reporting, and control requirements. The only exception are major sources of HAPs subject to the six-year extension under the Early Reductions Rule. To date, early reduction has received a decidedly mixed response from industry.

Industrial environmental managers should be especially aware of a potential Catch-22: the control technology you install to curb one type of emission (e.g., VOCs), may spawn emissions of other pollutants (e.g., NOx). Theoretically, this may trigger federal New Source Review. Before making an exception and reissuing a permit, a state may need to ensure that a source is not a significant new threat to ambient air quality standards. State agency review may prove time-consuming and costly even for facilities that subsequently prove exempt from an NSR.

The good news is that Section 112(d)

10 Steps to Minimize Your Title V Compliance Costs

1 Investigate every option for becoming a non-major source. 2 Until your draft Title V permit is issued, make every effort to specify broadly the fuels and raw materials your facility is designed to accommodate. 3 Establish the hazard ranking for HAPs from your operations and carefully record any recent or planned reductions for possible use as offsets. 4 Review any planned modifications or possible new material changes that could increase HAP emissions to allow time for offset investigations and other Section 112(g) avoidance measures. 5 Participate in campaigns being launched by industry associations to assist EPA and the states in establishing MACT under Sections 112(d) and 112(j). 6 Investigate the feasibility of reducing quantities of regulated substances under Section 112(r) to below threshold levels. 7 Achieve more realistic and smaller impact zones under Section 112(r) by performing risk-based consequence analyses. 8 Minimize potential Section 112(f) compliance obligations by conducting risk assessments to assess residual emissions. 9 Incorporate residual emissions reduction goals into your pollution prevention plan. 10 Document! Document! Document! Arm yourself with the necessary compliance data to avoid potential public lawsuits and agency penalties.

grants industry a say in the standard-setting process, partly because EPA is so far behind schedule. To determine MACT standards, regulators are gathering information on the optimum controls currently used by industry. But because of shrinking agency resources, concern is growing that EPA and the states may settle on less practical standards than could be developed if more and better information were available to regulatory decision-makers.

It behooves industry groups to gather data now on effective control options and actively assist agencies in setting effective and achievable standards. With defensible data in hand, industries may even succeed in petitioning to delist categories or establish different subcategories of standards. Control requirements for these subcategories might vary in stringency, depending on the types of sources involved. Whether government or industry sets the pace, one thing's for sure: once MACT standards are promulgated, the regulated community is going to have to live with them.

The "Sleeping Giant"

Section 112(g), the "sleeping giant" of the MACT process, is eminently sensible in its objective: to avoid uncontrolled HAPs from new or modified major sources. But in terms of implementation, this regulation is probably the single most problematic element of the statute.

When Congress decided to phase in MACT standards over a 10-year period during debate over the Clean Air amendments in 1989, legislators were concerned about the air pollution potential from new source construction, reconstruction, or modification during that period. Wouldn't it be better and more cost-effective, they reasoned, for these sources to incorporate MACT right at the design phase rather than installing retrofits later on?

The result was Section 112(g), a rule expected to be issued as soon as this coming fall. Under the rule, any construction, reconstruction, or modification of a major HAPs source must meet MACT standards before those activities begin. The rule applies in any state with an approved Title V program—whether or not the source in question falls into a category currently slated for MACT. If MACT standards have not been issued for the source category, the source is subject to a case-by-case determination.

Technically, there are two ways for existing major HAPs sources to be exempt from Section 112(g): watch your language in your Title V application or achieve creditable offsets. The first is by far the easier of the two options.

Obviously, the best way to avoid 112(g) is to avoid being classified as a "modification." The key is to carefully phrase your Title V application; the broader the language, the better your chances of avoiding "modification" status.

For example, consider a process that uses or manufactures adhesives. A number of different solvents may be used to formulate an adhesive, but each may release different HAPs. What if the adhesives manufacturer needs to change solvents? Does that change constitute a modification? If the answer is "yes," the manufacturer will face the 112(g) process. Clearly, a "no" is preferable.

Getting to "no" may simply be a matter of good up-front planning at the Title V application stage. If the manufacturer's application demonstrates that the process is "designed to accommodate" alternative fuels or raw materials (e.g., solvents) different from those currently in use, the change down the road would not constitute

a modification. If, on the other hand, the application specified the particular solvent(s) used, shifting to a new solvent might well be misconstrued as a "modification" subject to 112(g). Again: don't let the information in your Title V application come back to haunt you!

The second way to avoid 112(g), achieving creditable offsets, is an infinitely more complex and costly process. A source may "net out" of review by achieving equal or greater offsets of a more hazardous air pollutant. However, due to the hazard ranking scheme, the offset qualification process is a regulatory boondoggle—so convoluted that EPA has developed a computer program to help sources determine whether or not they qualify. To further complicate matters, EPA has yet to finalize offset provisions. The agency is currently debating three alternatives:

- historical offsets—to qualify, applicants may use actions taken in the past;
- simplified offsets—applicants may use only those offsets they implement now; or
- hybrids, a combination of historical and simplified offsets.

As we go to press, the jury is out, but informal interviews with EPA officials indicate that some type of hybrid approach is likely.

The MACT "Hammer"

According to Section 112(j), if EPA misses a MACT promulgation deadline, all sources in that category must apply for a MACT permit within 18 months of the missed deadline. Actual compliance must occur no later than three years after application approval. Under this hammer provision, MACT will be determined in either of two ways. Each source will be required to determine its own MACT standard, or standards will be set by the state. Should EPA establish a more stringent MACT standard down the line, however, sources would need to reapply for yet another permit revision.

At first glance, self-determination might appear to benefit industry. However, setting standards can be a time-consuming and costly process for an individual source. It's preferable for industry groups to pool their resources to assist EPA. Given timely and accurate control information from industry, the agency is more likely to set a standard that everyone can live with—while still meeting its regulatory deadline.

Accident Prevention

Section 112(r), under court order to be promulgated by March 1996, requires facilities that store or use certain substances beyond threshold quantities to develop and implement accident prevention programs. Although outside the framework of Title V, Section 112(r) remains a significant concern for many facilities.

EPA anticipates that the rule will be administered through agencies other than state permitting authorities; for example, local emergency planning committees handling EPCRA (the Emergency Planning and Community Right-to-Know Act under SARA Title III). In effect, Section 112(r) is the "outside the fenceline" equivalent of OSHA's 1992 process safety management standard for the protection of workers.

The key is to carefully phrase your Title V application; the broader the language, the better your chances of avoiding "modification" status.

Under 112(r), affected sources will need to register with EPA, develop a risk management plan and undergo compliance audits. The level of compliance will hinge on both the type of facility and the potential for serious consequences from an accidental release. As currently proposed, there will be three different compliance tiers ranging from Tier 1, for facilities that can prove "no impact," to Tier 3, requiring comprehensive and costly precautions. They include a 10-element prevention program that incorporates a detailed process safety review, training, internal and external audits, extensive recordkeeping and other procedures. In addition, sources will need to submit summaries of their hazard assessment and emergency response program results to local agencies no later than March 1999.

Once again, public oversight is a critical concern for facilities under this rule. Particularly controversial is the issue of "impact zones," geographic areas vulnerable to an accidental release. The zones must be plotted from worst-case and "more likely" release scenarios submitted by sources.

Depending upon the methodology used, impact zones may reflect conservative agency assumptions likely to alarm the public. A facility's best defense is to be proactive. Sources that perform their own refined consequence analyses, based on risk-based assumptions, are likely to achieve more realistic, and smaller, impact zones.

These results will be less costly to implement and less frightening to the public while fully protecting human health and the environment.

Post-MACT Emissions

Under Section 112(f) and pending further legislation, EPA is supposed to set residual risk standards within eight years of issuing MACT standards for each source category. Residual risks are the potential health and environmental impacts from emissions that persist after MACT installation. If the agency determines that residual emissions do not afford an ample margin of safety, EPA will issue additional controls for a source category.

Industries should take advantage of the time left before Section 112(f) is released to conduct their own risk assessments. Why? Under Section 112(g), states may choose to allow sources to determine site-specific *de minimis* levels for their emissions. By performing a site-specific risk assessment, you may well acquire substantive information on residual risks. If you are in EPA's four-year bin for MACT, for example, and your assessment indicates acceptable risk levels after a 90 percent emissions reduction under MACT, you can be confident that 112(f) will not apply to you.

Conversely, if residual risk appears substantial, you may find it less costly to install controls now than to retrofit down the line. Another money-saving option is to integrate residual risk information into your pollution prevention plans. Even though you cannot avoid MACT, you may well have time to mitigate or avoid Section 112(f) compliance obligations by implementing process alterations, materials substitutions, and other measures to minimize or eliminate residual risks. Careful planning may also give you a decided edge over less savvy competitors!

As the dust settles on the Title V application process, industry faces a whole new set of regulatory challenges. Now is the time to take steps to minimize or avoid costly compliance obligations down the road. Those who do will find themselves out in front of both regulatory hurdles and less proactive competitors. EP

Joseph Curreri is vice president for air quality studies for ENSR, an environmental consulting, engineering, and remediation firm in Acton, Mass., where he directs strategic programs in response to emerging regulatory requirements.

Building Flexibility Into Your Title V Permit

By Raymond Allen

Under the 1990 Clean Air Act Amendments, a Title V operating permit that provides "good operational flexibility" will allow a facility to make physical and operational changes without requiring revisions to that permit. While this issue has been hotly debated, industry is still uncertain about how to address facility changes under the program.

Much of the debate has centered around the types of facility changes that would trigger a public review of a facility's operating permit. Perhaps even more contentious is determining which type of permit revision (if any) is appropriate for a proposed facility change.

To further complicate matters, EPA has proposed restructuring the federal regulations pertaining to Title V permit revisions. Differences in state and local agencies' methods for interpreting and implementing Title V regulations add to the confusion.

Despite these uncertainties, permit applicants and permit holders can follow basic guidelines in dealing with facility changes and operational permits under Title V.

Off-Permit Changes

When a change is planned in a facility operating under a Title V permit, the first question to ask is whether the change is allowed or at least not expressly prohibited by the terms and conditions of the permit. Some facilities will be able to implement certain "off-permit changes" without making revisions to the operating permit.

There are, however, certain requirements for facilities that implement off-permit changes:

Compliance. To be classified as an off-permit change, the operating change must meet all applicable air regulatory requirements and must not violate any existing permit term or condition.

Written Notification. Under certain circumstances, facilities must submit a written notification to EPA and the appropriate state agency. The notification must provide the date of the change, any change in emissions and pollutants emitted and any applicable air regulatory requirement that will apply as a result of the change. A written notification is not required if the change is included on the state's list of insignificant activities.

Record-keeping. Facilities must keep an on-site record of all off-permit changes that

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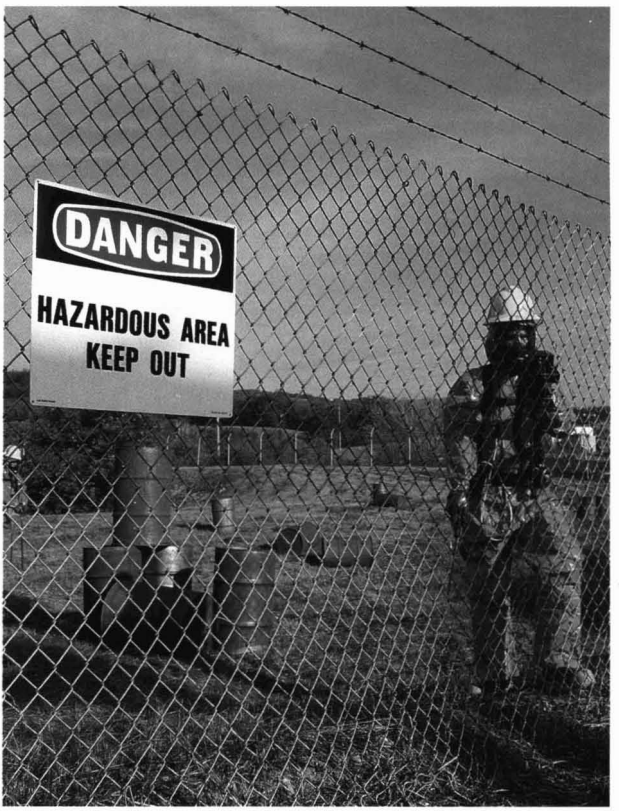

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Title V Permitting 'Simpler' Under EPA Plan

RESPONDING TO COMPLAINTS from industry and state and local air regulators, EPA hopes to streamline the process for revising operating permits under Title V.

An agency draft proposal says the new system would be "simpler, more flexible, and easier to implement" than previous proposals. The new rules would allow facilities to incorporate into their federal operating permits any changes made by state permitting authorities.

An August 1994 proposal was "widely perceived as too complicated, prescriptive, and disruptive to state programs," according to the EPA draft, which was circulated to interested parties for comment. Ray Vogel, an engineer in EPA's Office of Air Quality Planning and Standards, said the agency hoped to publish the new plan in the *Federal Register* by the end of June.

"Since most state [New Source Review] programs govern nearly all permit changes, EPA expects the vast majority of changes to qualify for this automatic incorporation option," the draft said.

As written, the draft "has a lot of advantages" over the previous proposal, Vogel said. "It eliminates a lot of duplication between Title V and the New Source Review program."

For example, a state would be able to take the NSR permit it has generated and "attach it to the back of a Title V permit," Vogel said. Last year's proposal would have set up a more cumbersome "four-track" system.

In the draft, EPA says public participation requirements included in the NSR process would satisfy Title V public comment requirements. "It builds upon these state preconstruction programs by allowing existing public participation requirements of adequate state programs to satisfy" Title V requirements, the draft said.

In the draft, EPA also said that it should not prescribe national minimum procedures for all potential permit changes. State minor NSR programs in particular vary widely in the type and form of requirements they impose.

—Steve Davies

are implemented.

Even if these requirements are met, it is important to note that off-permit changes will not qualify for the Title V permit shield, which is a mechanism to protect facilities from regulatory enforcement actions.

Alternative Operating Scenarios

Facilities may choose to be permitted for several alternative operating scenarios, from which the facility is allowed to freely select processes or operations. The regulations allow the use of alternative operating scenarios when a facility operates in two or more distinct operating modes, with each operating mode having distinctly different air emission characteristics.

One such example would be a chemical reactor that uses a regenerable catalyst. The catalyst must be periodically regenerated, and the catalyst regeneration sequence has distinctly different emission characteristics compared to normal reactor operation. When various operating scenarios like this are identified in a facility's Title V permit, a log must be kept at the facility to identify the times when switches are made between alternative operating scenarios.

Importantly, unlike off-permit changes, it is possible for the state agency to include identified operational scenarios under the permit shield.

Emissions Trading Schemes

Other alternatives include emissions trading within a facility—at least to the extent allowable in the applicable air regulatory requirements. Emissions trading schemes are sometimes referred to as the "bubble" approach. Specifically, a bubble can be defined as an alternative emission control plan where two or more existing emission points are regarded as being placed under a hypothetical dome, which is then regarded as a single emission point.

For example, a manufacturing facility may have a number of degreasing (solvent cleaning) operations in a single building, and it may be difficult to track and quantify emissions from a single degreaser. It would, however, be much easier to track and quantify emissions from all of the degreasers in aggregate.

Available Permit Revision Tracks

When a proposed facility change would, in fact, violate a Title V permit condition, then a permit revision is required. According to the current federal Title V regulations, there are three possible permit revision processes (or tracks). Listed by increasing complexity, they are:

Track 1: Administrative Amendments. This option involves changes in permit details that are not important to air quality. These may include changes in ownership, corrections of typographical errors, etc. Public comment is not required for administrative amendments to the permit.

Track 2: Minor Permit Revisions. This track can be used when the change is not a major modification and there are no significant changes to recordkeeping and reporting requirements. For example, the change does not meet the terms of "Prevention of Significant Deterioration" or "non-attainment New Source Review."

In most states, the proposed change may be made as soon as a completed application has been filed. It will be up to the state agency and/or EPA to determine whether public notice will be required.

Track 3: Significant Permit Revisions. This track includes all major changes. Essentially, it's the same as applying for a new Title V permit, because public participation and a review by the state agency and EPA are required.

EPA's Attempted Revision

A fourth permit track, called a "De Minimis Revision," was proposed by EPA in the Aug. 29, 1994 *Federal Register*. This proposed permit revision track would fit between administrative amendments and minor revision tracks. Under the proposal, a *de minimis* revision would apply to any change at a facility that results in air emission increases that remain below specified threshold levels. One example might be a hazardous air pollutant emissions increase of less than 1 ton/yr.

However, this proposed revision has drawn significant criticism from both industry and state agencies. Their primary concern is that it adds even more complexity to an already cumbersome regulatory program. A draft proposal circulating within EPA provides alternative mechanisms for the permit revision process (see box, this page). EPA estimates that a final permit revision rule will be promulgated in late 1995.

Maximizing Flexibility

Under the current framework, any change at a facility operating under a Title V permit will fall into one of the following seven categories:

- off-permit change with no notification required;
- allowable change under alternative operating scenarios;
- allowable change under an emissions trading scheme;
- off-permit change with notification required;
- change requiring administrative amendment;
- change requiring minor permit revision;
- change requiring significant permit revision.

A facility's Title V permit should be designed to make future facility changes fall as high as possible on this list of alternatives.

One way to maximize operational flexibility is to specify various facility operating scenarios or emission bubbles in the Title V permit. However, there are other ways to achieve Title V permitting to allow alternate modes of operation without specifying formal operating scenarios. Likewise, the same process used to assess the feasibility of operating scenarios should be applied to examining possible emissions trading schemes.

Advance Planning

As much as possible, permit applicants should forecast future facility process and operational changes and their impact on air emissions. Decisions should be made on a case-by-case basis about how each change would be interpreted in the applicable state Title V regulations.

It may even be worthwhile to address future facility changes during the initial Title V permitting process. Changes that should be forecasted include adding or replacing process equipment and/or increasing processing rates.

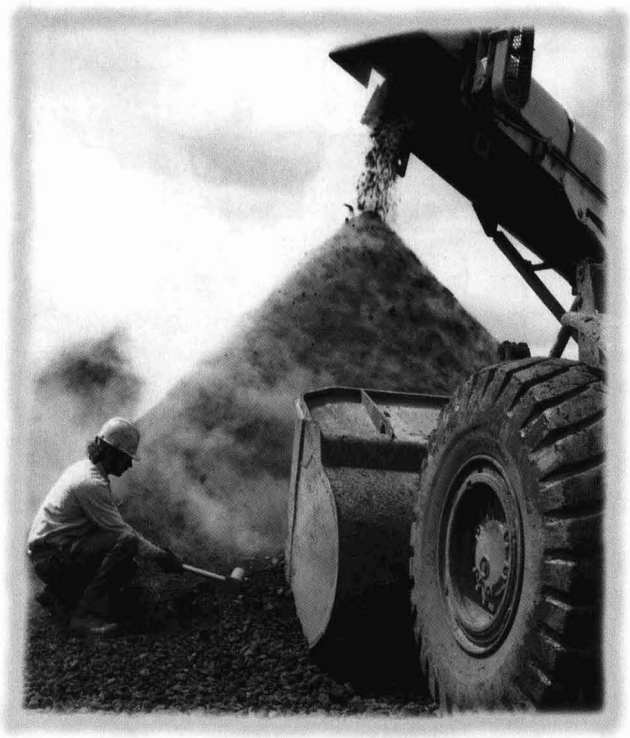
Of course, it will not always be possible to forecast future facility changes since they are based on unpredictable market forces and variables.

Black Box Approach

One last strategy involves carefully limiting the extent of information provided to the regulatory agency in the permit application. In this sense, the overall facility may be treated as a "black box," with emission sources representing outputs. The more the agency knows about the inner workings of a facility, the more likely it is to specify permit terms and conditions that could limit facility operating parameters and operating modes. This applies especially to those aspects of facility operations that do not affect air emissions.

Information provided in a Title V application, such as material balance and operational data, should be scrutinized to determine if the regulatory agency could use the information to construct permit provisions that limit operational flexibility. Consideration should be given to excising such information from a Title V permit application. As the old adage goes, less is (somtimes) more. EP

Chemical engineer Raymond Allen has worked in air quality for both EPA and the Louisiana Department of Environmental Quality. He is currently air resources department manager at the Baton Rouge office of Environmental Science & Engineering, Inc.



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Air Permits for Wastewater Plants?

Courtesy of Burns and McDonnell Engineers

Wastewater treatment facilities face the same permitting obligations as other "major sources" under Title V of the Clean Air Act.

By Jerry Bauer and Laura McGovern

OTHER THAN A FEW REGULATIONS AFFECTING AIR EMISSIONS FROM SEWAGE SLUDGE INCINERATORS, Publicly Owned Treatment Works have been largely unscathed by the plethora of air emission regulations generated by the 1990 Clean Air Act Amendments. In the next few years, however, the POTW industry will face many new air emission regulations—including an air emissions operating permit program under CAAA's Title V.

Under Title V, facilities meeting the definition of a "major source" of certain air emissions must obtain an operating permit. Deadlines vary from state-to-state, but most affected facilities will be required to submit an application in late 1995 or 1996.

Defining "Major Source"

The term "major source" has many components, but the criteria most likely to affect POTWs is whether they potentially emit 100 tons or more of any regulated pollutant annually. The threshold is actually lower for certain regions of the country (non-attainment

areas) where the ambient air quality does not meet federal standards for pollutants like ozone, carbon monoxide, or nitrogen oxides.

The POTW's potential emissions depend primarily on the composition of the water treated and the equipment utilized—such as engine generators, flares, sludge incinerators, boilers, auxiliary generators—rather than total water treated. A combined total potential emmission of 25 tons of the 189 pollutants designated in the CAAA as Hazardous Air Pollutants (HAPs) will also qualify as a major source.

POTWs often emit significant quantities of such criteria pollutants as nitrogen oxides, carbon monoxides, sulfur dioxide, volatile organic compounds (VOCs) and particulate matter. HAPs emitted will depend primarily on the industries discharging to the POTW and the types of combustion sources at the facility. Some of the common HAPs emitted include benzene, methylene chloride, 1,1,1 trichloroethane, toluene, and phenols.

In essence, many if not most POTWs will be close to the major source threshold definition and must conduct a comprehensive inventory of air emissions to determine whether they must file a permit application.

The Permit's Makeup

The new operating permit will resemble an NPDES water discharge permit and should add no new air emission limitations. It will be used instead as an enforcement tool for existing regulations, including federal and state air emission regulations and conditions imposed as part of any construction permit. The facility is responsible for identifying which regulations are applicable.

These permits will list emission limits and standards, including operational, monitoring and recordkeeping requirements. Alternate operating scenarios proposed by the POTW must also be incorporated into the permit.

Permit durations will be no longer than five years, and POTWs must pay fees based on emissions. Fees will typically be $25 per ton of actual emissions.

Is a Permit Required?

There are numerous points for POTWs to remember when assessing whether an air emission operating permit is required. The first is that the POTW—and not the state—is responsible for determining whether the operating permit application needs to be completed. The only way for a POTW to determine if it is a major source is to conduct an emission inventory.

States are sending out applications to most of the facilities that will be required to submit an application. However, some states may not be aware of the potential emissions from a POTW. Unfortunately, failure to receive an application from the state does not relieve a facility from its obligations.

After conducting an emission inventory, POTWs that conclude they are below major source thresholds should keep the necessary documentation on file. In some states they must submit this data to the state. Even if the POTW is not a major source, an audit or challenge from the state, federal EPA, or citizens group is always possible.

Next, remember the "potential-to-emit," a Title V program definition, requires assuming maximum capacities and design rates in calculating air emissions. For instance, although an emergency generator may only be used a few hours a year, it must be assumed to operate 8,760 hours per year when calculating potential emissions. Emissions control equipment cannot be taken into account when calculating potential-to-emit amounts unless the control equipment is required as part of a federally-enforceable permit or restriction.

Some POTWs would be wise to weigh whether they should take federally-enforceable restrictions—such as hours of operation, gallons of water treated, tons of sludge treated, or composition of influent water—as part of their permit application. The POTW must carefully consider whether such restrictions will impede flexibility of future operations or create significant verification burdens. In some cases, the POTW will be better off seeking a major source operating permit and enduring the additional paperwork rather than submitting to such operating restrictions.

Since most wastewater treatment plants currently face few limitations on how much pollution can be emitted, the actual Title V permit will contain few, if any, emission limits, monitoring or recordkeeping requirements. The greatest burden associated with the permit application for most facilities will be the emission inventory.

Calculating Treatment Emissions

Emissions from primary and secondary treatment occur when wastewater is exposed to the open air, allowing diffusion of volatile pollutants. Clarifiers, grit chambers, basins, lift stations and other wastewater treatment systems expose significant amounts of surface area to the atmosphere —all of which must be taken into account in calculating emissions potential. Calculations should include wastewater flowrates, the concentration of the volatile pollutants in the influent stream, the solubility and vapor pressure of the volatile pollutants. Even wind speed should be taken into consideration.

Also important are the ambient air and water temperatures; the dimensions of the treatment device (diameter, depth, etc.); and the aeration parameters, if applicable (such as impeller size, power input, etc.).

Because the equations are so complex, computer models based on mass transfer principles are most commonly used to predict air emissions. Some of the commonly used models include Surface Impoundment Modeling Systems (SIMS); WATER7 and WATER8; the Bay Area Sewage Treatment Plant Emissions (BASTE); and ToxChem+. These models will predict the fate of pollutants in the wastewater by evaluating three mechanisms—volatilization, adsorption, and biodegradation. Emissions predicted from a typical clarifier using SIMS, WATER 8, and Toxchem+ are shown in the accompanying table.

In POTW industry studies, all of the models have been found to overestimate emissions.

Emission Estimates from a Primary Clarifier

Process: Primary Clarification

Wastewater flow rate (average): 16 Million Gallons per Day

Physical Dimensions: Diameter 180' and Depth 40'

Pollutant	Concentration in Wastewater (ppm)	Predicted Annual Emissions (lbs/yr) Water 8	SIMS	Toxchem+
Benzene	0.1	187	580	104
Toluene	0.1	180	551	96
1,1,1 Trichloroethane	0.1	236	554	102
Methylene Chloride	0.1	195	621	117

Pollutants from Sludge

Significant emissions can take place in handling and disposal of sludge (i.e., storage, unloading to or from trucks, dewatering, thickening, and digestion). Additional pollutants can be emitted if the digester gas is flared or combusted.

Some air emission models can be applied to sludge handling. Alternatively, published literature provides an emission factor in terms of pounds of VOCs emitted per ton of sludge handled.

Sludge incineration will also produce significant quantities of NOx, CO, SOx, and particulates. Incinerators can also emit nonvolatile HAPs such as lead, mercury, beryllium, chromium, and cadmium. Emission factors for these pollutants are available in the EPA's Compilation of Air Pollutant Emission Factors (AP-42).

Equipment Emissions

Combustion of natural gas or digester gas (either in boilers, flares, or internal combustion engines) can produce significant quantities of both criteria pollutants and HAPs. The primary criteria pollutants of concern are NOx, CO, and SOx. Any chlorine present in the digester will most likely be converted to Hydrogen Chloride, a HAP, and the hydrogen sulfide will produce SO_2. If combustion is poor, formaldehyde, acetaldehyde and benzene are likely by-products that must be accounted for.

Use of actual air emission stack test results is always the most accurate method of estimating emissions. In the absence of such data, emission factors which represent typical data for similar processes and equipment must be relied on. Most of these emission factors are conservatively high and

will overestimate emissions from a boiler or engine with good combustion. In some instances, the POTW should consider conducting actual emissions testing to obtain more accurate—or lower—emission estimates.

Emission factors defined in terms of pounds emitted per process throughout are readily available for combustion of natural gas. Caution should be exercised when applying these factors because the presence of hydrogen sulfide and chlorinated hydrocarbons in the digester gas will result in greater and more diverse emissions than predicted using emission factors based on natural gas combustion.

Miscellaneous Sources

Additional emission sources not directly related to wastewater treatment or sludge handling include the following processes and equipment:

- Fuel powered emergency generators
- Fuel powered pumps, compressors, boilers, and space heaters
- Welding
- Vehicle travel on unpaved roads
- Parts cleaning stations using VOC-based solvents

All of these emission sources need to be included in the emission inventory when determining the POTWs potential emissions. As with the emergency generators mentioned earlier, potential emissions are based on operating 8,760 hours per year, so emissions of pollutants from these sources can be significant.

For example, a 200 kw back-up electrical generator, firing No. 2 Fuel Oil, will have an estimated potential NOx emissions of approximately 30 tons if the generator has no federally enforceable restrictions on its annual hours of operation. Similarly, a 200 kw back-up generator using gasoline will have potential CO emissions of several hundred tons.

What does this all boil down to? Simply put, many unsuspecting POTWs will discover that they are affected by these regulations. But the reality is, POTWs must expand their environmental focus to include air emissions. EP

Jerry Bauer is a process engineer specializing in air emissions inventories, permitting and pollution control technologies for Burns & McDonnell in Kansas City. Civil engineer Laura McGovern is environmental manager for Burns & McDonnell's Westmont, Ill., branch office.

Navigating the Title V Permit Process

One Manufacturer's Story

The Clean Air Act Amendments of 1990 have had a significant impact on the way companies do business and plan for the future. That is certainly the case at Dolphin Inc., Phoenix, Ariz., where CAAA provisions are a major driver behind pollution prevention and management planning at the facility.

With some 525 employees working two shifts, Dolphin—a wholly owned subsidiary of Karsten Manufacturing—operates a precision investment casting facility that produces metal castings used for Ping golf clubs, aerospace and petrochemical parts and other industrial components.

Over the past few years, Dolphin has significantly reduced its use of toxic substances, emissions of air pollutants, and generation of hazardous wastes. We accomplished these goals through process modifications, chemical use controls, materials substitution, and employee education.

The Challenge

Title V of the Clean Air Act poses a whole new set of compliance challenges, and after reviewing the burdens facing companies classified as major sources under the CAA, we decided to seek a natural minor or synthetic minor permitting designation. The effort required prioritizing air issues in our pollution prevention program and mobilizing teams from various departments, consultants and vendors—involving a tremendous research and financial obligation by the company.

The pollution prevention program at Dolphin has been in place for several years, but the potential impact of CAA Title V permitting provisions put the program center stage. When it became clear that the CAA could potentially slow down or halt some of our future plans, we began reviewing the facts, exploring all of the options, and evaluating corporate goals. Our conclusion was that Dolphin's pollution prevention efforts should focus on achieving a "natural minor" classification, which would allow some future expansion without the limitations of New Source Review or major modification permitting.

By Erich Nolan

At the time, our own emissions inventory defined us as a "major source." In fact, Maricopa County, our local air permitting authority, had already placed us in that category. Since source classification is based upon potential to emit, not actual emissions, we needed to determine the largest source of emissions and eliminate it entirely. Fortunately, that process was already underway.

Target: VOCs

Our casting process, which must achieve extreme design tolerances, begins when hot wax is injected into metal dies to produce a wax pattern of the part to be cast. The wax patterns are washed in a cleaning solution to remove oils and mold release materials and to etch the surface so that a shell coating can bond to its surface. The pattern is

then coated with a sand/binder material, forming a shell around the wax pattern. Once the shell has dried, the wax is melted out of the shell in a steam-heated autoclave, leaving a hollow shell mold of the part. After heating the shell to approximately 1800 degrees F, molten metal is poured into the shell and allowed to cool. Final metal finishing may consist of acid or caustic etching, sandblasting, grinding, and degreasing.

A number of these processes involve use of volatile organic compounds, the largest source of air emissions at the facility. Until 1991, Dolphin used ethanol-based binder materials that contain over four pounds of VOCs per gallon of binder. In 1989 alone, Dolphin's VOC emissions from binder materials totalled 676,800 pounds. We began replacing ethanol-based agents with water-based alternatives that contain less than 0.1 pounds of VOC per gallon of binder in 1993, and following a complete phase-out of ethanol-based binders last March, VOC emissions from binding agents this year are expected to shrink to approximately 6,500 pounds.

The switch was far from easy. Because of the different shrink characteristics of water-based binders, the conversion has been a difficult and expensive process. Significant testing and retooling has been required to reach each customer's design tolerances. But the effort paid off by putting our total actual plant VOC emissions well below 100 tons per year and our calculated potential emissions near or below the 100-ton threshold. The county has since downgraded Dolphin's initial classification from a major source to a synthetic minor source.

Other emission sources have also been targeted for elimination or reduction. In the past, the wax pattern cleaning process used a number of solvents, including tetrachloroethylene (PCE), 1,1,1-trichloroethane (TCA), methylene chloride, Freon 11, Freon 12, and Freon 113. In 1990 and 1991, Dolphin converted to citrus-based cleaners. This greatly reduced the use of toxic substances and ozone-depleting substances. However, citrus-based cleaners contain VOCs, so Dolphin has begun using an iron-phosphate solution for patterns that do not require a high level of etching. We are now evaluating cleaners with lower VOC content in order to make a dent in emissions from this process—a job that involves coordinating several departments, as well as consultants and product vendors. In 1993, Dolphin emitted 22,880 pounds of VOCs from the wax wash process. By the end of 1995, we expect to reduce that amount by at least 25 percent.

Promising Substitutes

Until 1993, we used PCE for a number of applications, including general cleaning, wax pattern repair, die cleaning, and vapor degreasing. Through a series of steps, including materials substitution, equipment modernization, and chemical use control, Dolphin has since confined use of PCE to vapor degreasing only, and has reduced its use from 9,800 pounds in 1993 to 1,700 pounds in 1994. For all other applications, the PCE was replaced with a citrus-based cleaner. Dolphin is also currently evaluating various non-toxic substitutes for PCE degreasing, and hopes to have PCE eliminated by the end of 1995. Again, a team approach among the Metal Finish, Wax, Engineering, Maintenance, and Environmental/Safety Departments, integrating input from vendors, has been the key.

Dolphin uses an acid etch process for some of its metal cleaning and scale removal. Until very recently, most of the acid cleaning was performed using hydrofluoric acid, which is a listed Hazardous Air Pollutant in the CAAA.

In November 1994, production requirements indicated a need to significantly increase acid usage. County air rules would have required a pre-construction major permit modification for the increase.

Instead of pursuing a permit modification, we decided to experiment with sulfuric acid, which is not a HAP, as an alternative etchant. After successful trials, we switched roughly 90 percent of the HF usage to sulfuric acid.

As additional bonuses, sulfuric acid is less dangerous to employees. And it eliminates a sludge produced at the bottom of the acid dip tanks by hydrofluoric acid, which generated as much as 2,000 pounds per month of hazardous waste.

In seeking to avoid a permit modification, we ended up with an alternate process that saves considerable sums on hazardous waste disposal.

The reductions we achieved in VOC emissions were accomplished in tandem with significant increases in production. Comparing 1992 to 1993, the amount of metal poured at Dolphin increased by 60 percent, and from 1993 to 1994 by 18 percent. Using an integrated team approach, pollution prevention efforts have become the way Dolphin improves its standing within the classification schemes of the CAAA. With that improved standing comes a significant economic benefit by reducing material costs, reducing employee exposures, reducing permitting requirements, reducing management burdens, and by increasing our ability to respond to customer needs.

And we're always looking for new pollution prevention opportunities. EP

Erich Nolan is environmental director at Dolphin Inc., Phoenix, Ariz., maker of Ping golf clubs and other precision cast products.

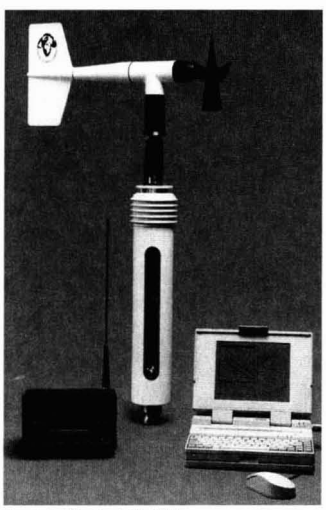
TECHNOLOGY PROFILE

A GUIDE TO AIR MODELING/MONITORING SYSTEMS

Clean Air Act requirements such as Title V are putting a premium on tools that can help companies ensure compliance. Particularly important for facilities that must file Title V permit applications are systems that aid in monitoring and modeling air emissions. Here's a look at some promising solutions to the regulatory burdens.

WEATHER MONITORING INSTRUMENTATION

Weather monitoring plays a crucial role in designing emergency response plans—particularly for large chemical facilities. New weather monitoring systems feature integrated electronics, add-on sensor capabilities and easy set-up.



Coastal's WeatherPak 2000.

New Electronics

A third system, the WeatherPak-2000 meteorological weather station, provides real-time, on-site weather data to a centrally located computer and dispersion models for chemical releases. The upgraded system, from *Coastal Environmental Systems*, provides wind speed and direction, air temperature, relative humidity, barometric pressure, and optional precipitation and solar radiation sensors. Other analog or digital sensors can also be installed.

The system features new 32-bit electronics based on the Motorola 68332 microcontroller and Windows-based networkable control software. A quick-release design allows one-step set-up and deployment. A single housing encloses all sensors and electronics.

Modular Design

Q-Net, an integrated weather monitoring system, provides essential components for any size weather station in a flexible, modular design. The expandable system, made by *Qualimetrics Inc.*, can include one or more sensors that measure key weather elements.

A standard Q-Net package includes a 10-foot tripod tower with 5-foot mast, network controller, sensor interface, power supply and cables and mounting hardware. At the heart of the system is the StationPac, a vented, rainproof fiberglass enclosure with a second sealed metal enclosure inside. Additional modules, such as a net radiometer, soil/water temperature probe and evaporation gauge can be added.

California Rescue

Handar, of Sunnyvale, Calif., specializes in weather data collection products for remote outdoor installations. The company's line of monitoring systems, the 555 series, features a software system that employs a graphical user interface with pull-down menus. Data collectors can be accessed in a number of ways—via radio, cellular link, modem, or GOES satellite radio.

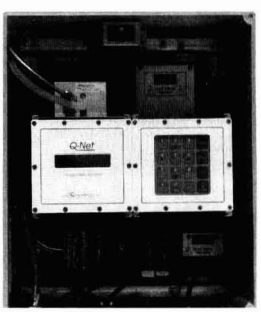
The 555 provides a large assortment of sensor interfaces, 16 single-ended or 8 differential user-configurable analog inputs, with each interface individually programmable.

The system was recently selected by the California Department of Water Resources in an emergency authorization following heavy rains last January that caused failure of a flood monitoring system.

Handar's 555 Series.

Instrumentation Lift

For easier access to weather monitoring instrumentation, the No-Climb Safety Lift raises or lowers instruments for servicing and calibration, eliminating the need for folding or hinged towers.



Qualimetrics' StationPac.

The lift system, made by *Met One Instruments*, allows one person to safely raise or lower the instrument carriage. A 15:1 worm-drive capstan and an endless cable raise and lower the lift with a minimum of effort. A removable crank handle can't run away from a lone operator.

The lift is adaptable to a wide range of tower types and sizes. Retrofitting is available.

AIR MODELING SOFTWARE

Air modeling software packages can be invaluable in performing emissions inventories, evaluating accidental release scenarios and filing emissions reports. Many systems interface with weather monitoring equipment, chemical databases and other compliance software.

Charm School

Radian Corp. and EIS International have joined forces to

produce the Complex Hazardous Air Release Model, a chemical release modeling software system fully integrated with EIS's Emergency Information System. The CHARM modeling system works both as an emergency planning tool and an emergency response system.

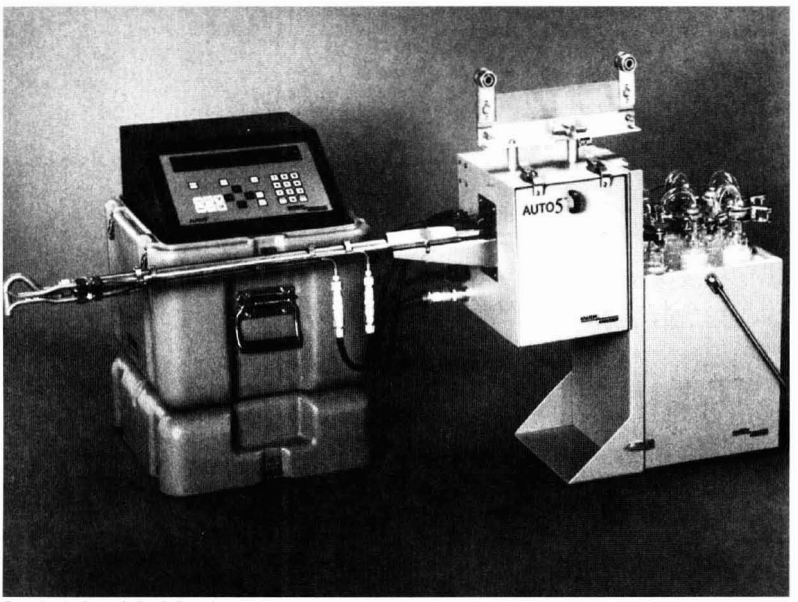
CHARM's chemical database contains data on physical, chemical and toxic properties of 200 chemical compounds. A ready interface with a separate database product expands that number to more than 1500. Releases can be described as instantaneous or continuous, contained or uncontained, liquid or gas. The model also accounts for whether a release occurs at ground level or an elevated surface, whether it is heavier or lighter than air and the type of surface on which it occurred.

Meteorological data can be integrated from instruments, including Coastal Climate's Weatherpak system, or entered manually.

Just the Facts

Air emissions modeling for Title V data management is the newest of more than two dozen software modules that make up the Facility Tracking System (FacTS), developed by *Quantum Compliance Services Inc.* The Air Emissions Management Module provides users with the tools needed to estimate air and water emissions, advises users if permits are likely to be exceeded and provides input for preparation of SARA 313 reports.

The module links with the FacTS information management system and aids in developing a source inventory of air emissions required by Title V, permit preparation, emission monitoring and emission projections.



Graseby Andersen's Stack Sampler.

"What-if" Software

A software package developed by *Galson Corp.*, pcAir can satisfy air quality permitting needs, track reductions in ambient concentrations, store emissions inventories, prepare reports in standard or customized formats, and generate "what-if" scenarios. The system, which runs on PC-compatible computers, can integrate data from a variety of existing databases, digitized maps, CADD files and spreadsheets. Users can choose between standard EPA air dispersion models or customized models.

Using geographic information system technology, pcAIR presents data in map form with pan and zoom capabilities and a point-and-click query tool. Different groupings of plant sources can be defined, analyzed and stored.

For More Information . . .

Circle the reader service number for more information on products featured in our modeling/monitoring roundup.

EIS International/Radian Corp.	**Circle no. 100**
Coastal Environmental Systems	**Circle no. 101**
Galson Corp.	**Circle no. 102**
Graseby Anderson	**Circle no. 103**
Handar Inc.	**Circle no. 104**
Met One Instruments	**Circle no. 105**
Qualimetrics Inc.	**Circle no. 106**
Quantum Compliance Systems Inc.	**Circle no. 107**

STACK SAMPLER

The Auto5 stack sampler, from *Graseby Andersen*, is programmed to solve EPA Method 5 sampling equations, calculate sampling traverses, record temperatures and pressures and automatically adjust the isokinetic sample rate. The system uses the isokinetic extraction principle according to EPA criteria for Methods 1 through 5.

The sampler maintains constant sample flow rate for EPA gas sampling methodology and long-term sampling requirements and enables quick verification of the isokinetic sample rate. It also validates test results at the conclusion of each test.

An accompanying software package for PC-compatible computers generates reports based on sampling data. EP

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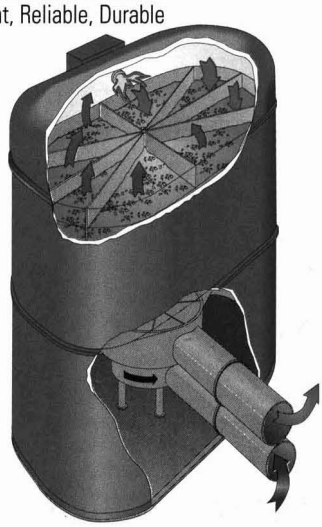

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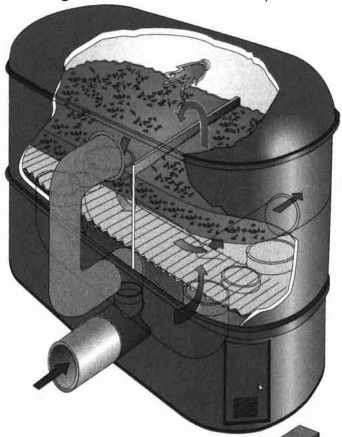

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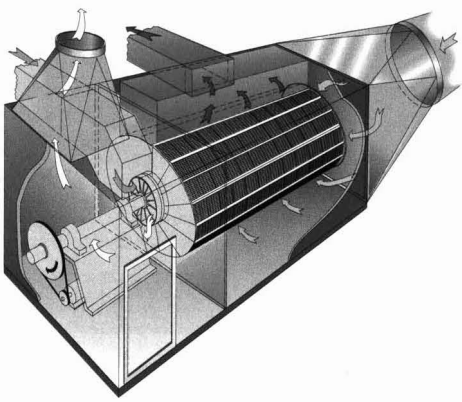
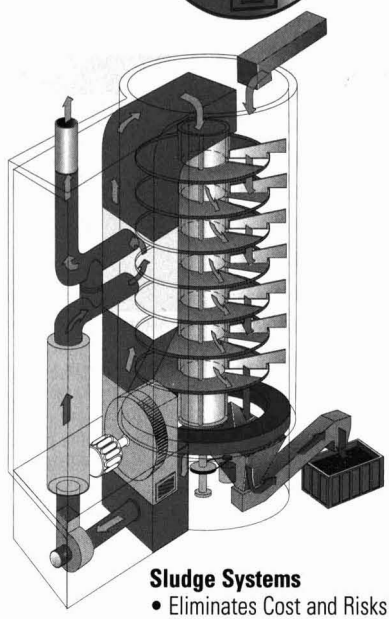


VOC Concentrator Systems
- Zeolite
- Activated Carbon



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SALVATION OR STRAIGHTJACKET?

Title V's "Synthetic Minor" Option

Facilities facing Title V permitting requirements may be able to avoid Title V by agreeing to certain operating conditions—the so-called "synthetic minor" option. But what yardsticks should be used to examine whether to pursue this classification option?

As with any regulatory option, there are pros and cons, and a slew of procedural requirements, that need to be considered in weighing the synthetic minor alternative. Indeed, a wrong decision may prove far more costly in the long run than the significant savings gained by avoiding a Title V permit.

What does a synthetic minor designation mean? Freedom from the deadlines, paperwork, and expenses involved in preparing a Title V application. It also means not having

By Uday M. Patankar and Kristian Witt

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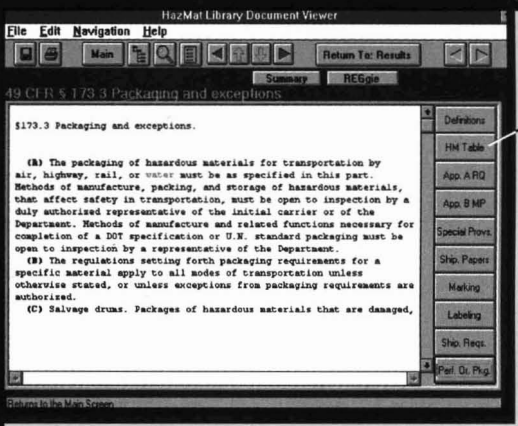

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Pros and Cons of Synthetic Minor Election

PROS: With a Synthetic Minor, Your Facility

- Falls outside the requirements of Title V, RACT, etc.;
- May be exempt from emission fees;
- May not have to deal with Title V-related future regulations, such as Enhanced Monitoring, and the MACT trigger in Title V;
- Will be covered by a state permit, which is generally easier to revise as situations change;
- Will not have to bear the annual Title V reporting and recordkeeping burden; and
- Will need an abbreviated emission inventory, limited to the pollutant which figured in your synthetic minor status.

CONS: Once You Elect to Be a Synthetic Minor

- Any future expansion beyond the federally enforceable limits agreed to in your synthetic minor is subject to the fullest extent of PSD, NSR and emission offset requirements as applicable;
- You do not have a Title V permit shield; and
- As a synthetic minor, you are still subject to the procedural requirements of public participation/public notices and EPA approval.

to develop a detailed emissions inventory—including, in many instances, fugitive emissions—for the facility. It also provides an exemption from emission fees associated with Title V releases. And it excuses a facility from complying with future Enhanced Monitoring regulations and other upcoming rules applicable to Title V facilities—including Maximum Achievable Control Technology triggers.

Fewer Protections

Once approved as a synthetic minor, on the other hand, any future expansion of a facility is subject to all the applicable new source provisions, including Prevention of Significant Deterioration, New Source Review and emission offsets. These may prove costly if, for example, your plans call for running the facility beyond its synthetic minor limits on a temporary basis.

Moreover, facilities that choose the synthetic minor option forgo the safety of the "permit shield" under Title V, which provides protection against third-party enforcement actions and lawsuits. A permit shield

may be especially valuable to a facility that faces unwanted attention from citizen groups. Those considering the synthetic minor option, therefore, should take into account the loss of this liability protection.

A hot mix asphalt plant is a prime example of a facility for which a synthetic minor designation may make sense. This type of facility has the potential to emit more than the emissions threshold for a major facility, but typically does not operate as a major source facility. For example, a plant might have the capacity to produce 300 tons per hour of asphalt and burn #2 fuel oil, with an annual emissions potential of 233 tons of NO_x. If the plant happens to be located in a severe non-attainment area for ozone, its major source threshold is 25 tons of NO_x per year.

Should the facility choose to become a synthetic minor facility, it must limit to 24.9 tons per year its potential to emit NO_x. After subtracting the NO_x emissions from the asphalt tank heaters, the limit is set at 23.9 tons of NO_x per year. At this limit, the facility can still produce 281,176 tons of hot mix asphalt annually.

Facilities that choose the synthetic minor option forgo the safety of the "permit shield" under Title V, which provides protection against third-party enforcement actions and lawsuits.

On the other hand, a synthetic minor designation for the facility would establish a NO_x emission baseline of 24.9 tons per year. Any future significant increase in NO_x emissions beyond the baseline at this facility (for example, increased production to supply a large highway project) will trigger Reasonable Available Control Technology requirements, Prevention of Significant Deterioration, New Source Review, emission offsets and significant additional paperwork. This fact has to be weighed before a synthetic minor election is made.

It is important to note that the synthetic minor approval process is subject to practically all of the procedural requirements of a Title V process in terms of public notice, opportunity for public participation, and EPA approval. You do not avoid these procedures when deciding to pursue a synthetic minor designation.

A careful evaluation of your specific circumstances will allow you to decide whether a synthetic minor is indeed the more prudent approach, attractive as it may seem at first glance. EP

Uday Patankar is president of JACA Corp., an environmental engineering and consulting firm in Fort Washington, Pa. Kristian Witt is a chemical engineer with the firm.

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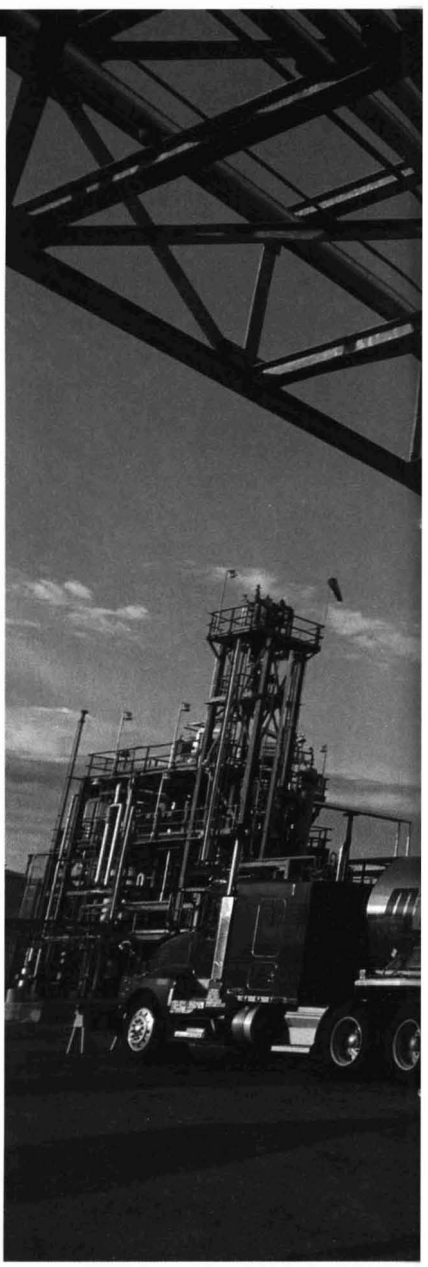
Evaluating HazMat

Your hazardous material and waste liabilities don't end when a transporter carts it away. Here's what you should know before the truck leaves your facility.



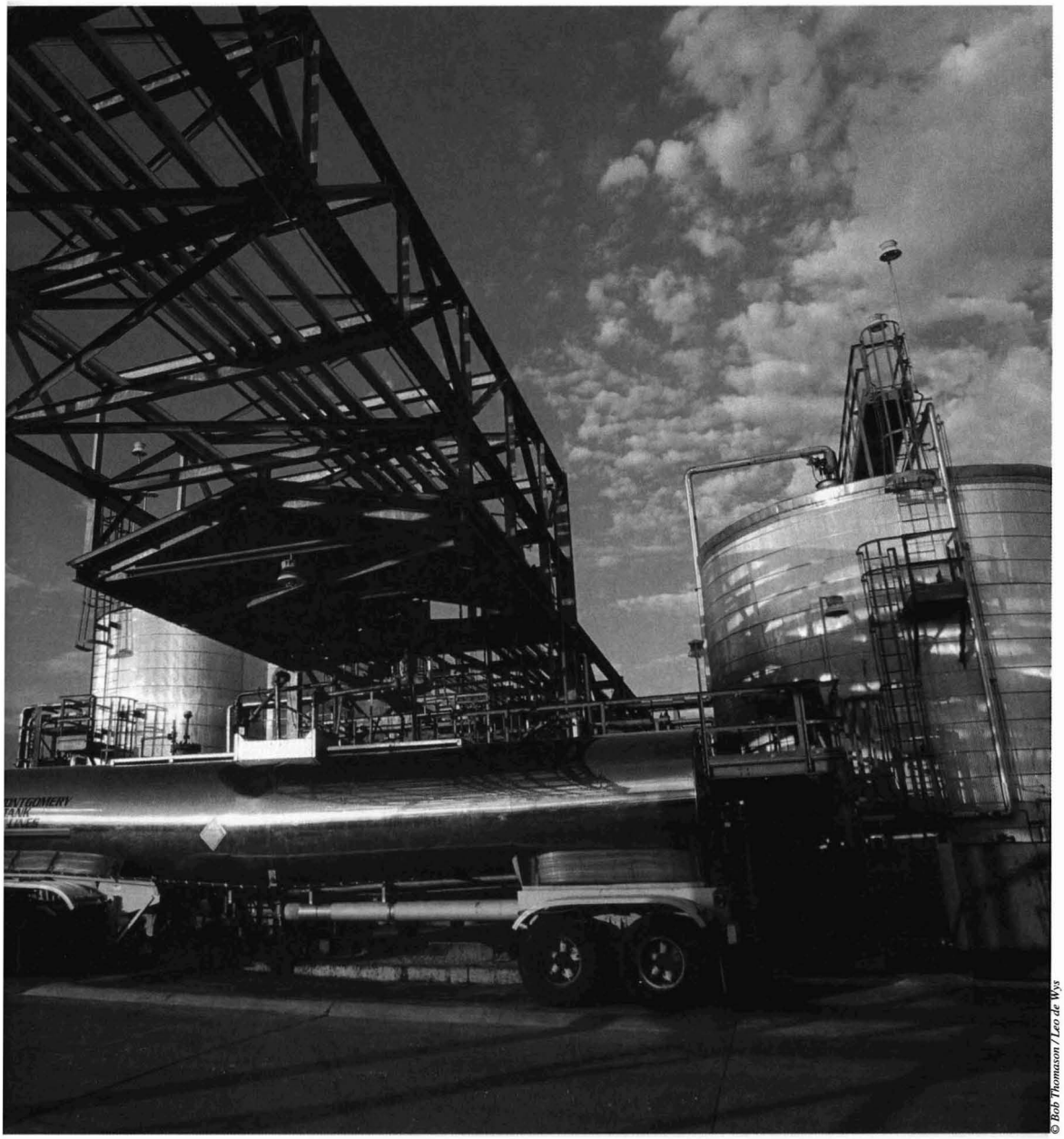
Virtually all companies use or generate hazardous materials or waste. But the regulations addressing the storage and handling of such materials are generally better understood than those that govern transportation.

In fact, all too many environmental managers are unduly relieved when their hazmat carrier pulls away from the gate, assuming the risk leaves with it.

But some liability remains with the company that generated the materials/wastes and, whether your company is small or large, selecting a carrier can be a critical risk management decision. As part of managing hazardous materials, you need to protect against more than onsite releases or cleanup problems. Offsite problems caused by carriers who disregard legal requirements and good practices—or who use unapproved disposal facilities—can be your responsibility as well.

Transporters

By Lisa Bendixen



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Transportation

To some extent, companies are protected through DOT regulations. These help ensure hazardous material and waste transportation safety by addressing issues such as rules of the road, container selection, placarding, shipping papers, communications before and after accidents, and driver training. But these rules provide no guidance for choosing a carrier–a process that is best understood within the context of a company's risk management program.

Evaluating Your Carrier

In the broadest sense, risk management is the means by which an organization identifies, assesses, and controls all risks to its viability. To determine how active your risk management program for carrier selection should be, you first need to characterize your company's current carrier selection practices. The following categories represent the types of transporters and the specific concerns associated with each tier.

Table 1. Carrier Assessments

Risk Factors	Issues to Investigate
Accidents: Avoid factors that increase the likelihood of accidents due to impaired judgment—such as pressure for more rapid turnarounds, fatigue, or substance abuse; assure that lessons are learned from any problems which do occur.	Hiring policies, alcohol and controlled substance testing, licensing, hours of service compliance, management policies, document control, accident investigations and reporting, documentation
Driver Qualifications: Assure that only competent drivers with appropriate experience are used; again, reducing the likelihood of an accident.	Driver qualifications—commercial drivers license, endorsements, health, age, road experience, moving violations and accident limits, etc.
HazMat Handling: Minimize the potential for product release and control the consequences of any releases which do occur.	Training, hazardous materials training, loading and unloading procedures, load securement, emergency response procedures, speed controls
Carrier Performance: Select quality carriers with proven performance and avoid repeat offenders or those for whom safety will never be a prime concern.	Accident history, motor carrier safety ratings, fines and citations, regulatory compliance
Equipment Reliability: Minimize the chance of any problems arising from equipment failures—either in transit or from valves and fittings that are not properly maintained.	Inspection, repair and maintenance programs—maintenance of leased vehicles, inspection reports, mechanical integrity, failed vehicles
Fiscal Responsibility: Assure maintenance and equipment integrity, as well as ongoing support for driver training.	Financial health.
Liability Concerns: Measure past performance and control the degree to which claims may be made against your organization.	Insurance—limits, provider, claims history, etc.
Environmental Risks: Control facility risks and measure overall environmental awareness of the carrier.	Control/disposal of wastes, wash out facilities, personnel protective equipment

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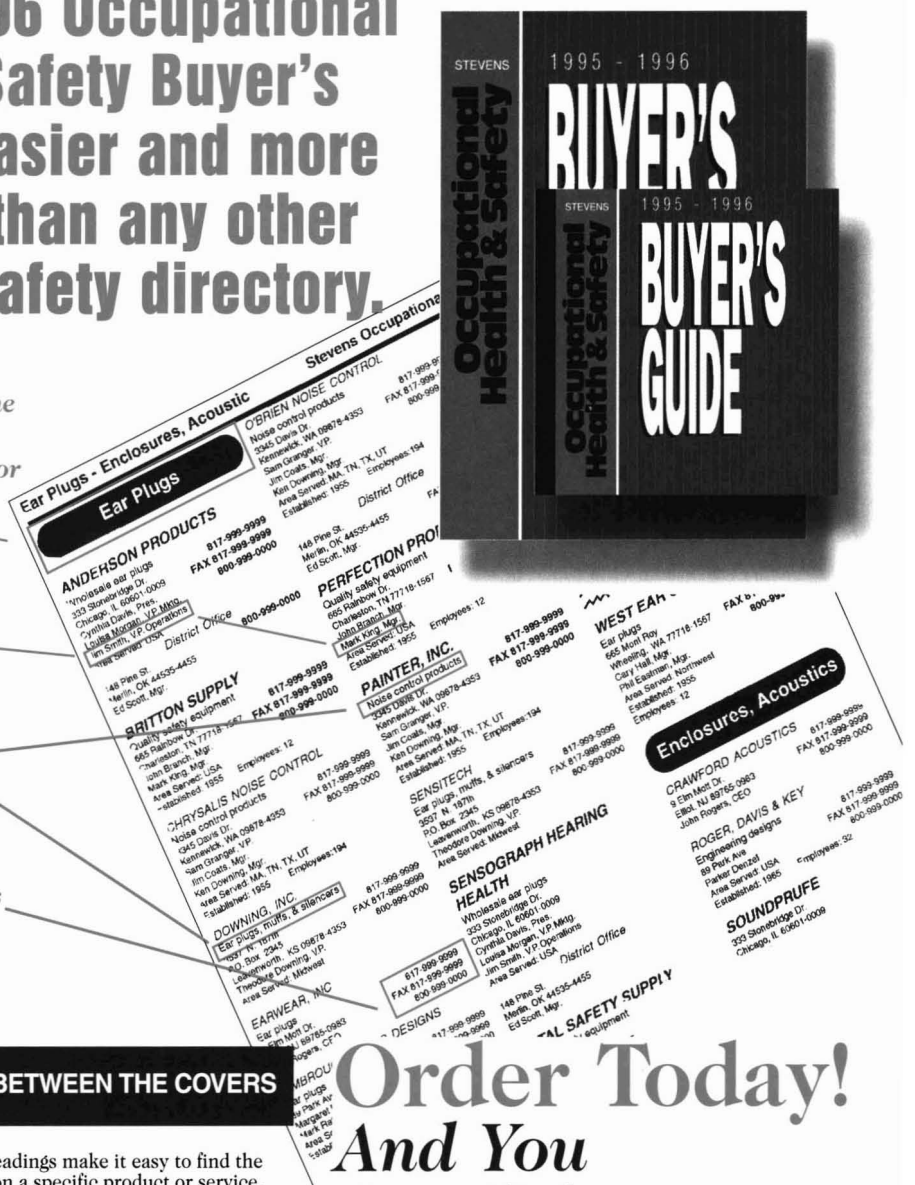

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Large dedicated hazardous material/ waste haulers: These carriers tend to have their own fleet, dedicated drivers, environmental, health, and safety specialists, training programs, and strong documentation. But their programs may vary in quality. With dedicated carriers, you need to ensure that you have selected a high-quality firm, but will probably not need to provide them with significant information and guidance.

Specialty haulers: Typically small fleets with dedicated drivers, these carriers tend to know safety rules, but may not have their own risk management programs. Working with them, you need to strike a balance between relying on their expertise and supporting it with your own. You may want to track or monitor the carrier's response to new regulations.

Carriers whose hazardous material/ waste hauling is secondary to overall operations. These carriers can be large or small general trucking firms, or, in some cases, basic couriers. They may have limited risk management resources, and you should be very active in making sure you are comfortable with their safety and regulatory

HazMat Corrosivity Tests Simpler, Less Costly

Recent Department of Transportation revisions governing corrosivity test methods for hazardous materials transport will likely yield savings in both time and money for industrial generators.

Companies and agencies that generate or transport hazardous materials are allowed to test samples for corrosivity using test tube methods under the March 1995 DOT revisions. Such *in vitro* testing, which can be done on-site with basic laboratory equipment, is faster and less expensive than traditional animal-testing techniques, industry observers say.

InVitro International, Irvine, Calif, a maker of corrosivity testing equipment, says *in vitro* test methods cost only a quarter of the $1,000 or more involved in animal tests and take far less time. And waste generators can conduct the tests themselves, says company President Rich Ulmer.

"Users of Corrositex need only basic lab skills to do this test, and it doesn't require any special equipment," says Ulmer of the company's corrosivity testing system. "The cost of this testing requirement can be lowered to under $200 per sample – and you can have the results in as little as three minutes."

The Corrositex system uses a synthetic bio-barrier that mimics skin response to corrosives, Ulmer says. The speed at which sample materials "burn" through the synthetic membrane and the degree to which they change the color of chemical detectors determine their corrosivity.

Many industrial waste generators have been using simple pH testing to rule whether their transport material might be potentially corrosive, Ulmer notes. But they face the likelihood of overpacking material that is not corrosive with this inaccurate method, he says.

"Now that this test is available, many of our clients (especially chemical manufacturers) have realized a net savings because they're not paying for overpacking."

compliance programs.

Regardless of the size or experience level of the carrier you're using, certain risk management practices should be considered as minimum requirements for both your organization and your carrier. It's especially important to understand the hazards of the individual materials being transported and how they are controlled–through loading and unloading procedures and container selection. This should include segregation of incompatible materials and load securement.

The carrier should also follow good practices to minimize the likelihood of an accident as a result of equipment problems, driver errors or fatigue, road conditions, and other factors.

Help's Available

Since large operations tend to have the greatest experience and the most resources for selecting and managing carriers, smaller operations can learn from their expertise. This is especially the case for the small companies whose resources are more limited and who may rely on less knowledgeable or resourceful carriers.

Regardless of the size or experience level of the carrier you're using, certain risk management practices should be considered as minimum requirements for both your organization and your carrier.

One way to do so is to take advantage of the various carrier assessment programs that are being prepared by the Chemical Manufacturers Association under the auspices of Responsible Care. These programs are geared toward meeting CMA's goal of an ongoing process to qualify carriers on the basis of safety fitness and regulatory compliance.

But these guidelines can be very time consuming and daunting if you are not familiar with their intent. Some of the assessments have 25 or 30 pages of questions and provide little insight on how to interpret the results–nor do they pare the questions down to a list that is both manageable and appropriate for your needs.

To help you winnow down the full guidelines to relevant areas, the table on page 40 contains many of the individual assessment topics covered in more detailed questionnaires. These have been grouped into related issues and indicate what risk factors each area addresses.

By focusing on these critical factors, you can keep your approach to carrier selection and assessment straightforward and simple, while still providing greater risk management than you may presently have. EP

Lisa Bendixen is a director of Cambridge, Mass.-based Arthur D. Little, Inc., specializing in transportation safety and risk management for a wide range of industries.

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THE CORPORATE ENVIRONMENTAL AUDIT

WILL EPA'S NEW POLICY FINALLY LEVEL THE PLAYING FIELD?

By Stephen L. Kass and Jean M. McCarroll

Regulators are demanding them. The public wants access to them. And businesses are conducting more of them. "They" are corporate environmental audits, which contain a wealth of information about companies' practices and their compliance—or noncompliance—with environmental laws.

And therein lies the rub. If an audit uncovers past violations and the company dutifully reports that information to EPA, not only can the company still be fined, but the information may be available to others as well. A debate about audit confidentiality is currently raging, with a handful of state legislatures voting to make audit information privileged, and EPA opposing such efforts. The agency recently issued an interim policy on environmental audits that reduces, but does not eliminate, penalties for violations that are voluntarily disclosed. The policy also explicitly refuses to make such information confidential. Corporations, however, have less to fear from such a policy than they might think, and companies are likely to keep conducting more and more environmental audits.

Auditing Craze

The growth of voluntary environmental auditing is one of the most dramatic developments in recent years in the area of corporate environmental management. Indeed, a Price Waterhouse survey released this spring shows that three of four companies surveyed – and nearly all the largest companies—already had environmental auditing programs.

For a lot of good reasons, the use of audits is increasing. For one thing, it's just good business sense. Companies believe auditing programs help them improve environmental management and compliance, increase competitiveness, and reduce the long-term risk of environmental liability. Sometimes, however, companies have no choice but to perform an audit. They have to do so in order to satisfy lenders, who want to minimize their exposure under the Superfund law or assure prospective purchasers they are not buying a Superfund site. They may also have to satisfy disclosure requirements under the Securities Act or meet disclosure requirements about workplace safety.

Corporate environmental audits generally refer to assessments of a company's environmental management practices, such as control and reduction of hazardous waste; compliance with federal, state, and local environmental regulations and license requirements; compliance with occupational safety and health regulations; and potential liability for environmental harm – cleanup costs for past disposal of hazardous substances, for example.

Mixed Reviews from Industry on EPA Audit Policy

EPA's new policy on environmental audits is a good start, say industry officials, but it doesn't go far enough.

Specifically, many businesses would like to see EPA eliminate penalties entirely for self-reporting of environmental violations. They are also concerned about third-party access to audits.

"They did probably as good a job as they could do," says Stephanie Siegel, an attorney representing the Coalition for Improved Environmental Audits. "But it's not what industry wants." The coalition's members include such industry giants as Weyerhaeuser, Caterpillar and Bell Atlantic.

The policy, in which EPA says it will reduce penalties for self-reporting and will not request voluntary audits to trigger enforcement investigations, was published in the April 3 *Federal Register*. EPA has asked for comments on it.

Siegel called the policy "a big step" for EPA, but added, "It doesn't provide protection for audits in all cases. It doesn't protect the results of audits from going to third parties." Industry is concerned that such access could lead to more citizens suits against corporations.

The policy says that providing audit privileges and penalty immunities "could encourage increased litigation as opposing lawyers battle over what is privileged or immune from penalties and what is not." But Siegel countered, "I suppose any law could encourage litigation. That's not a very credible argument."

A handful of states have passed privilege laws designed to protect company audits. Privilege bills have also been introduced in Congress. EPA, however, says it will "scrutinize enforcement more closely in states with audit privilege and/or penalty immunity laws."

Another industry concern is that EPA says it will give companies that audit a break on penalties only for certain violations they discover during audits. "If you violate one of those self-reporting obligations you cannot get a break because you were supposed to report it anyway," says Curtis Johnson, who handles environmental, health and safety audits for Browning-Ferris Industries.

EPA is prepared to listen, says Geoff Garver, senior policy counsel in the Office of Enforcement and Compliance Assurance. "There are some issues that need further discussion," he says. "After the 60-day comment period [that ended June 2], we'll consider making additional refinements" to the policy. —*Steve Davies.*

Despite the benefits of environmental audits, many companies worry about disclosing their audit results, fearing the information may be used against them. Of the companies surveyed by Price Waterhouse, 25 percent reported that outside parties had attempted to obtain their audit data and 15 percent reported that such attempts had been successful. Twelve percent said audit results voluntarily provided had been used against them in enforcement proceedings.

Attempts to Establish Privilege

Corporations have had limited success in the courts establishing a privilege to protect audit information from disclosure. One court, in the case of *Reichhold Chemicals Inc. v. Textron Inc.* (157 F.R.D. 522, N.D. Fla. 1994), a Comprehensive Environmental Response, Compensation and Liability Act cost-recovery suit, established a qualified privilege for certain "self-critical analyses." The court noted that corporations might be discouraged from performing self-critical analyses if the information gathered for them were disclosed to adversaries in court. It then found that the public interest in encouraging corporations to assess compliance with environmental laws outweighed the interest of private litigants in gaining access to such information.

On the other hand, the court limited the privilege to after-the-fact reports prepared for "candid self-evaluation and analysis" of the causes of past pollution that were intended to be confidential and were, in fact, kept confidential. The court also said the privilege could be overcome by an "extraordinary circumstances or special need." It should be noted that the seeker of the information was a private party, not a governmental agency.

Unwilling to rely on the slender reed of such a privilege, corporations have looked to federal and state lawmakers for help. Bills have been introduced in the House and Senate that would create federal statutory privilege for audit information. At the state level, Colorado, Illinois, Indiana, Kentucky, and Oregon have already enacted privilege statutes to protect "voluntary, internal, and comprehensive" environmental audits intended to identify past noncompliance and improve future compliance with state and federal environmental requirements. Similar bills have been introduced in New York and a dozen other state legislatures. Most of the bills – enacted or proposed – authorize the courts to deny a privilege when a company asserts it for a "fraudulent purpose," when it has been waived by the corporation, or where the party claiming the privilege did not take timely steps to correct any violations revealed by the audit.

EPA's New Policy

In part to counter the movement toward privilege laws, EPA recently issued its own environmental audit policy. The "Voluntary Environmental Self-Policing and Self-Disclosure Interim Policy Statement," released March 31, seeks to reward corporations that carry out voluntary audits by reducing civil penalties for voluntarily disclosed and promptly corrected violations of federal environmental laws; limiting criminal referrals of such violations to the Justice Department; and eliminating routine requests for such audits in pre-enforcement civil and criminal proceedings.

To qualify for the benefits, however, a corporation must meet several conditions. For example, for a corporation's environmental violation to qualify for the civil penalty reduction—which consists of eliminating the punitive component of such penalties—and the forgoing of criminal referrals, EPA must be satisfied that:

- The violation was discovered in the course of the audit or during another form of voluntary self-evaluation "appropriate to the size and nature of the regulated entity";
- The violation was "fully and voluntarily" disclosed to all relevant local, state, and federal agencies "as soon as it [was] discovered (including a reasonable time to determine that a violation exists)" and *before* the start of any government inspection, investigation, or information request, any notice of a citizen suit, any legal complaint by a third party, or any knowledge by the corporation that discovery of the violation by others was "imminent";
- The violation was corrected within 60 days or, if that was not enough time, "as expeditiously as practicable";
- In addition to correcting the violation

itself, the corporation promptly remedied any condition that created or may create "an imminent and substantial endangerment to human health or the environment";

- The corporation implemented "appropriate measures" to remedy any other harm to the environment from the violation and prevent any recurrence of the violation;
- The violation did not indicate that the corporation failed to take "appropriate steps" to avoid recurring violations; and
- The corporation cooperated fully with EPA including providing relevant information to allow the agency to determine whether the interim policy applied, providing access to employees, and assisting in any further investigation of the violation.

The interim policy also provides that, even in cases involving criminal conduct, if the above conditions are satisfied, up to 75 percent of the punitive component of penalties may be waived. On the other hand, the policy makes clear that even comprehensive voluntary audits are not enough to allow a corporation to benefit from its past violations of law. EPA specifically retains its discretion to recover the economic benefit portion of any penalty otherwise due in order to avoid putting firms that comply at a competitive disadvantage.

The interim policy also makes clear that EPA will not request voluntary corporate audits in order to trigger either civil or criminal investigations. It may, however, ask for such information as part of an independently triggered investigation.

EPA's interim policy does not directly affect a corporation's dealings with the many private parties that may be interested in its environmental audits. The policy does reflect an EPA decision to use its administrative discretion to reward voluntary corporate audits by reducing sanctions rather than supporting judicially created or legislatively enacted privileges for such audits. EPA criticizes such privileges for possibly shielding criminal misconduct, driving up litigation costs, and creating an atmosphere of distrust between the regulators and industry. It also says in the policy that it will "scrutinize enforcement more closely" in states that have enacted audit privileges.

EPA's decision to reject the call for a privilege for environmental audits has already been criticized by corporations (see box, page 46). In reality, however, the debate over the privilege issue may be overblown. Even where it is established, a privilege is not likely to be recognized in the many cases in which audit data are voluntarily shared with outside parties. Since a large reason corporations conduct audits is to provide requested information to prospective lenders, buyers, or other third parties, the privilege is apt to prove less useful for the auditing corporation than EPA's interim policy, particularly if, as seems likely, a similar approach is adopted by state enforcement officials.

EPA's interim policy seems likely to encourage the continued growth of environmental audits among U.S. corporations, as well as foreign firms doing business in the U.S. Although the policy does not give the business community all that it asked for, EPA has taken a big step toward making voluntary environmental audits less risky for corporations that seek to identify and correct past errors and place their future environmental practices on a sounder footing.

Stephen L. Kass and Jean M. McCarroll direct, together with Clifford P. Case, the Environmental Practice Group at the New York City firm of Carter, Ledyard & Milburn.

Environmental PROTECTION

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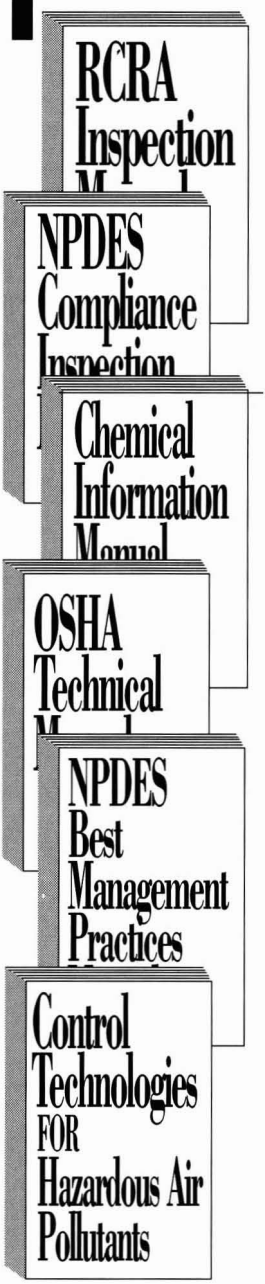

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Guest Commentary

By John P. DeVillars

Region I's Contract: Less Enforcement, More Partnership

Over the past several months, environmental leaders have gone hoarse decrying the potential impact on environmental protection of the "Contract with America." There are no two ways about it: The contract would spell disaster for human health and the environment by freezing or delaying health-based regulations and adding layers of bureaucratic review.

Those of us in the business of protecting human health and the environment have a clear choice. We can roll over and play dead as the contract dismantles the system of environmental protection as we know it. Or, we can demonstrate the energy and leadership to advance a critically necessary reinvention of the nation's approach to environmental protection.

The Clinton-Gore Administration and EPA are achieving just that by putting forth an antidote – a series of alternatives to the current system that would improve on the gains of the past 25 years – not roll them back. New England is one region where that is happening rapidly and aggressively.

Moving beyond our historic approach to environmental protection is essential. The current system – with all the good it has achieved – needs substantial reform. Too often the costs of environmental protection imposed on the taxpayers, communities and businesses are out of sync with the benefits.

Today's system depends too often on inflexible command-and-control approaches, leading to mistrust and hostility between government, businesses and environmental advocacy groups. It relies too heavily on outdated technologies. And the bureaucratic structures and processes that govern the way we do our work have changed little, if at all, in 25 years.

At EPA-New England (Region 1), we have made it our goal to become a laboratory for bold experimentation. Building upon reforms at the national level, we have launched a series of initiatives designed to become models for other regions of the country—new, more effective ways of giving taxpayers value for their environmental protection dollars.

Emphasis on Assistance

Here's how it works. It begins with substantial disinvestment from oversight and instead shifts resources into hands-on assistance to communities and businesses. We're re-engineering our enterprise to reduce the ratio of managers to staff from 1:5 to 1:11, allowing employees to focus less on overseeing others and more on work that translates directly into real environmental results. Where the contract would have federal employees spend their days wading through a 23-stage cost-benefits analysis, this plan will take more employees off company floors and put them in communities.

To advance this goal, we are also putting in place a dramatically different organizational structure—setting aside the media-driven stovepipe approach and instead establishing cross-media, sector and place-oriented Offices of Ecosystem Management and Environmental Stewardship.

We're putting the marketplace to work for better environmental protection as well. An important effort in this regard is the promotion of less costly innovative environmental technologies and support for the $10 billion environmental industry in New England. EPA-New England has opened the Center for Environmental Industry and Technology to promote this industry and capitalize on its environmental and economic potential. Technology funding and demonstrations, trade missions and access to capital markets all signify the dawn of a new day at EPA.

In another innovation, we will implement an expanded market-based pollution trading system this summer. By allowing companies to trade pollution credits, we will get more NOx and VOCs out of the air at considerably less cost to industry, motorists and others. The Republican contract would require years of further regulatory review, letting this ripe idea rot on the vine of bureaucratic procedures.

We are putting behind us the adversarial relationships of the past in favor of long-term partnerships with the community we regulate. The contract would undermine public-private partnerships by making public officials and their families personally liable for the consequences of their decisions.

This summer, we will launch a program to enhance compliance and pollution prevention by encouraging companies to take advantage of a limited period of enforcement amnesty in return for self-auditing and well-implemented corrective action and pollution prevention plans.

Another project underway, the Environmental Leadership Program, is encouraging and rewarding

John P. DeVillars is administrator of the New England regional office (Region I) of the U.S. Environmental Protection Agency.

those companies that have a proven track record of strong environmental management. We're already working with two corporate leaders in New England, The Gillette Co. and Ocean State Power, as part of the national ELP.

We will select 15 additional companies to work with us in pioneering better approaches toward responsible environmental stewardship over the next several months. In return for responsible environmental management and pollution prevention efforts, EPA is not only promoting and publicizing companies' environmental achievements but offering a variety of rewards – including reduced inspections and reporting, third-party certification, faster permit review, and enforcement discretion.

Moreover, we are moving aggressively to recruit candidates for President Clinton's Project XL, through which companies are encouraged to propose projects that replace existing regulatory requirements with alternative environmental management strategies – provided the company can demonstrate that its strategies will achieve better environmental results than would rigid compliance with the existing law.

Finally, these partnerships include an assistance program – based on Administrator Carol Browner's Common Sense Initiative – called the New England Environmental Assistance Team. The NEEA Team is working with businesses and municipalities to help them green their bottom line by achieving greater profitability through improved performance.

And as we work more closely with those businesses that are committed to good environmental stewardship, we are drawing a line in the sand for those who refuse to take responsibility for their actions. None of these reinvention activities can work without sure and certain enforcement of the national environmental laws, especially when human health and the environment are at risk. That's what our Strong, Targeted Enforcement Program (STEP-UP) is all about—working closely with our state and federal partners and targeting our activities where they can achieve the most bang for the taxpayer dollar.

It's clear that some elements of a command-and-control approach to environmental protection must go. But seek-and-destroy methods in the contract are not the right alternative.

This nation needs, and EPA offers, a wholesale reinvention of environmental protection. It's not just the better choice. It's the only choice. EP

Legal Watch

By Bradford D. Roth and Neville M. Bilimoria

"Post-Cleanup Stigma" Claims: It Can Happen to You

A new body of case law leaves companies vulnerable to claims that a remediated site, no matter how clean, is permanently devalued.

"Thank you for cleaning up the property you contaminated, Mr. Tenant/Landuser. However, I'm suing you for post-cleanup stigma!"

Just when the business community thought it was safe to acknowledge property contamination and set about cleaning it up, a new legal claim has emerged that could stymie those good intentions. "Post-cleanup stigma" claims brought by property owners are the latest litigation threat facing environmental managers

A developing body of case law seeks to compensate owners of property for future damage caused by the "public perception" of a diminution in value of a post-cleanup property. The novelty of this damage claim lies in its ability to compensate for mere market depreciation of a property where there is "unfavorable" public perception, even when there is no permanent physical environmental damage.

Recent phenomenon

The trend had its beginnings in a 1993 case, *Bixby Ranch Co. v. Spectrol Electronics Corp.*, involving an electronics maker that had leased a parcel of industrial property from 1965 to 1990. In 1988, the Los Angeles Regional Water Quality Control Board found that Spectrol had caused soil and groundwater contamination at the property to the tune of three million dollars. At trial, Bixby Ranch claimed that even if Spectrol cleaned up the site, it would not be properly compensated because of the future stigma associated with the contaminated property. Bixby Ranch claimed damages including a diminished value in the plaintiff's property in terms of its future use, rental or sale. It also contended that a governmental agency could order further cleanup in the future if standards for environmental control were heightened.

The jury agreed, finding that the "stigma" would reduce the property's value by 18% and awarded the plaintiff $826,500 in damages. This decision is currently on appeal.

With the Bixby case on appeal, a federal court in California has entertained a similar post-cleanup stigma case. Citing California law, the Court ruled in *Federal Deposit Corp. v. Jackson-Shaw Partners* (N.D. Cal. 1994) that a property owner may be able to recover damages "which might include a component relating to the stigma caused by the contamination [from hazardous substances], although this remains an open question." The vague ruling reflects the uncharted judicial landscape that these cases are entering.

The post-cleanup stigma claims are not limited to California courts. A federal court in Illinois recently recognized the damages of environmental stigma in another case, *Hawthorne Partners v. AT&T Technologies, Inc.* (N.D.Ill. 1994).

Judicial Ambivalence

Other jurisdictions have steadfastly refused to award post-cleanup stigma damages. The United States Court of Appeals for the Fifth Circuit ruled that under Mississippi law, property owners were not entitled to damage awards for losses in property values based on stigma claims. The case, *Berry v. Armstrong Rubber Co.* (5th Circ. 1993), involved illegal dumping by a tire manufacturer — and a property owner's claim that even after cleanup, the property would be devalued.

But post-cleanup stigma claims in Pennsylvania fare better. Although a federal court in 1994 applied Pennsylvania law in denying a claim for damages arising solely from the stigma of environmental contamination, a more recent decision upends that precedent. In *In Re Paoli R.R. Yard PCB Litigation* (3rd. Circ. 1994)), the court recognized the principles of stigma where plaintiffs can show the diminution in the value of their property even where there is no permanent physical damage to the land. The resulting conflict between the federal and state courts in Pennsylvania reflects what will no doubt be a continuing controversy in this area.

In proving stigma damages, property owners typically bear the burden of offering expert appraisals as proof that post-cleanup stigma will actually diminish the market value of their properties. Since the nature of post-stigma damages is somewhat subjective, proving a diminished market value in the eyes of the jury may be a daunting task for plaintiffs.

Bradford Roth is a partner specializing in environmental and toxic injury litigation with Chicago law firm Cassiday, Schade & Gloor. Neville Bilimoria is an associate with the firm.

Defendants often challenge these appraisals, arguing that they are much too speculative to support a claim for damages. Such proof would be contrary to common law principles that require some reasonable basis for the award of damages, defendants in these cases maintain.

Plaintiff and defense tactics were put to the test in a 1994 case, *Hawthorne Partners v. AT&T Technologies*. The plaintiffs offered testimony from an expert armed with a survey on market value declines that followed hazardous waste cleanups at various sites. The defendants challenged the validity and relevance of the report, introducing their own expert who testified that the survey was flawed, unreliable, and invalid. The court denied the defendant's motion to exclude the plaintiff's expert's testimony and chose to leave the question of stigma damages, as well as the credibility of the experts, to the jury.

Preparing a Defense

Defense tactics include looking to the lease and the "reasonable wear and tear" exception to justify some degree of contamination to preclude allegations of stigma damages. Tenants would have a viable argument that post-cleanup contamination within agency standards constitutes reasonable wear and tear under the lease. This argument could be advanced as a defense to the entire claim or as an attempt to demonstrate a mitigation of the claimed damages.

Attorneys are questioning the fairness of potential damages that are, by definition, both subjective and speculative in nature.

Litigation Rise

The controversy surrounding post-cleanup stigma damages has environmentalists and attorneys questioning the fairness of potential damages that are, by definition, both subjective and speculative in nature. However, the uncertainty caused by this type of claim may serve to discourage good faith efforts to clean up contaminated sites and may increase litigation between the parties who could be held potentially responsible for hazardous waste remediation. Although a party may agree to accept some responsibility for actual damages, it may be reluctant to put itself in a position of being exposed to additional damages, the amount of which is uncertain and subject to various interpretations.

The law in this area is still developing and, in the meantime, there will be inconsistent decisions from one jurisdiction to another. However, given the potential amount of recovery, we can expect that landowners will continue to press forward for such damages, and it will be necessary for tenants, land users and other parties potentially responsible for hazardous waste remediation to be mindful of these developments. EP

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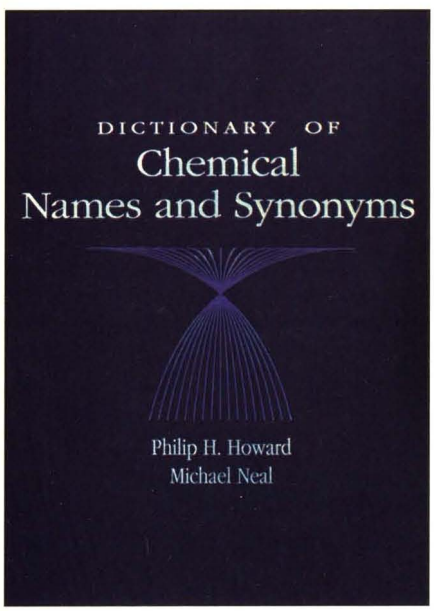

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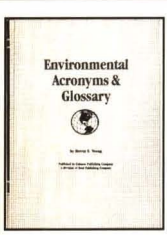

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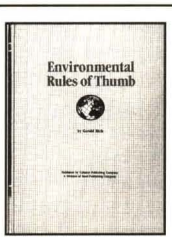

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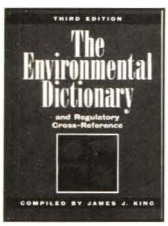

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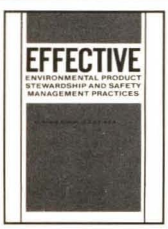

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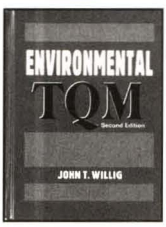

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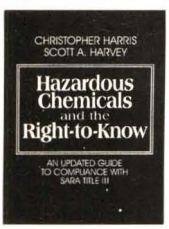

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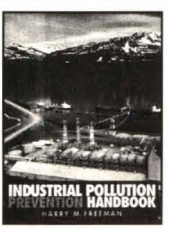

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States Try Their Hand At Prioritizing Risks

In Ohio, concerned citizens have come up with a solution for their environmental problems: They're throwing money at them.

Well, not money, play money. As part of the state's effort to rank environmental risks, people who attend public meetings are given play money to show how they would divvy up the state's environmental funds.

"By putting money in the boxes they can lay out the budget," says Edward Burtt Jr., who has been conducting public meetings as part of Ohio's comparative risk project. "We're trying to make it as realistic as possible." So far, habitat loss and land-use issues are showing up near the top of Ohioans' priorities.

The state is one of a growing number seeking to enhance public input in evaluating environmental priorities by using comparative risk assessment. The process, which has the support of EPA and some members of Congress, should not be confused with the scientific risk assessment and cost-benefit analyses that many lawmakers would require the agency to conduct. Instead, it's a process where scientists, government officials, industry, environmentalists and the public try to rank risks and decide what to do about them. The process usually begins with an analysis by a group of technical experts such as academics and regulators, followed by public meetings and, frequently, surveys to gauge popular opinion.

A recent report from the National Academy of Public Administration recommended that EPA use more comparative risk assessments, and EPA's assistant administrator for prevention, pesticides and toxic substances, Lynn Goldman, told a group of state regulators earlier this year that comparative risk is "an idea whose time has come."

For many state and municipal governments outside the nation's capital, it already has. At last count, about 40 states, counties and cities across the country have completed or are conducting comparative risk projects, complete with rankings of environmental problems. In Washington state, for instance, a comparative risk project is credited with helping the legislature pass air toxics legislation. EPA-New England is working with states in its region on a comparative risk project to target the worst environmental problems (see article, page 50.) And the action extends beyond governmental boundaries. In Virginia, company and government officials and environmentalists are working on a comparative risk project targeting the Elizabeth River.

Value Judgments

The comparative risk bandwagon got rolling back in 1987, when EPA released *Unfinished Business: A Comparative Assessment of Environmental Problems.* The report, which received widespread publicity, found the government was not paying enough attention to certain environmental problems, such as indoor air, radon, accidental air releases and discharges to coastal waters and estuaries. EPA followed up by encouraging its regional offices to rank risks as well. Since then, a number of states and localities have followed suit, all in an attempt to find some consensus on environmental concerns.

"It's a process for bringing information about the environment to decisionmakers," says Ken Jones, who heads the largely EPA-funded Northeast Center for Comparative Risk, a kind of clearinghouse on the subject. "The way we develop the process is to develop a dialogue between the technical experts and the decisionmakers."

The projects try to get every possible constituency involved. "We push like mad at the beginning" to include every possible group, Jones says. "You try to get a representative body that, rather than just producing technical papers, tries to respond to the needs of decision-makers."

A happy byproduct, say proponents, is a better understanding of the subjective side of risk assessment. "The myth is that risk assessment does not involve a lot of value judgments," says Debora Martin, head of the Regional and State Planning Branch in EPA's Office of Policy, Planning and Evaluation. Not so, she says. "Is it the so-called Ph.D expert locked in a room in Washington who decides what those risks are and what those judgments are? Or will it be the public, or the process that brings the two together?"

Political Pitfalls

Perhaps it's not surprising that states and local governments report varying levels of success with their comparative risk projects. The process is young, the problems and the people involved are different, and politics can intrude. Louisiana's efforts provide a case in point.

The Louisiana Environmental Action Project, known as LEAP To 2000, was one of the first state-level comparative risk initiatives when it produced a ranking of environmental problems – complete with scientific and public input – in 1991. Then Gov. Buddy Roemer lost to Edwin Edwards. A year's lull in the project followed,

Steve Davies is Senior Editor with Environmental Protection.

and when Edwards finally issued an executive order reviving the project, many of the members of the group's public advisory committee were no longer involved. "The project, like many other state initiatives, was put on hold," said Ed Flynn, director of health and safety affairs for the Louisiana Chemical Association and a member of the public advisory committee. Many of the original PAC members "were not at the table in the [implementing] phase. Energy levels were diminished. It was difficult trying to follow through."

"A lot of people were weary" after working for a year and a half to come up with a report, said Randy Lanctot, executive director of the Louisiana Wildlife Federation. "Frankly, the environmental groups pooped out as much as anybody." Edwards was not as popular with environmentalists, leading to their abandonment of the project. Lanctot also said that once the rankings were completed, "EPA stopped providing funds.... The fanfare was gone, the synergy was gone, and the money was gone."

Flynn, however, gives DEQ officials high marks for coming back to the reconstituted public advisory committee to report on their progress with the LEAP recommendations. "We've come to a point where some real things are taking place. The legislature is in session and there are a number of bills in the House and the Senate that pertain to certain comparative risk or LEAP 2000 issues," he says. "I think perhaps the project played a part in that."

Still, it's unclear just how much influence the project has had to date. The project identified air toxics at the top of its list of priorities, but the legislature had already passed stiff air toxics legislation.

"I would hesitate to say that any definitive action has come out of this," says Samuel Holder, a biologist with the Minerals Management Service who served as a citizen on the public advisory committee. He and others said the main benefit of the project was that industry and environmentalists sat down together to discuss issues and work toward a consensus. For Lanctot, however, that benefit is cosmetic. "You still see [industry and environmental groups] fighting; they just know each others' names better," he says.

Future Prospects

It seems certain that states and local governments will continue to use comparative risk as a tool to set environmental priorities. But their success or failure will depend in large part on the people involved. "The single most important ingredient for a successful comparative risk project is strong, committed and constant leadership," said a report from the Northeast Center for Comparative Risk. "You have to have at least a commitment [to the process] at the environmental secretary level," Debora Martin says. If the governor's office doesn't know about it, you shouldn't do it."

But keeping energy levels high can be difficult when so many people involved are volunteers. "There's no single answer for how you keep people interested," says Ken Jones. "They will remain engaged as long as they see something happening and see their input has an influence. I'm still very, very excited about the process."

Of course, money is a big factor. The more there is, the more resources the project will be able to afford. Some projects at the municipal level are not as well funded as the state efforts, Jones says.

At the least, the public and the companies and others involved stand to gain from a well-organized, well-publicized project. Speaking of the Ohio project's conclusions, Procter & Gamble environmental compliance manager Dick Scott says, "I'm optimistic that what it's going to do is help focus on what pieces of legislation will pass." EP

By Kenneth C. Taylor

More Environmental Resources on the Internet

Last month, this column looked at some key regulatory resources available at Internet sites. In addition to regulatory data from EPA, OSHA and other federal agencies, cyberspace is fast becoming home to a multitude of EHS research data, grant programs, networking and other interesting environmental information.

The trick to navigating Internet sites is to be clear on your target topic before beginning your search. The electronic landscape lends itself better to focused searches rather than casual browsing. The intrepid navigator should also be aware that valuable data is often found amidst menus of political opinion and special interest dogma.

The University of Virginia (GOPHER://ECOSYS.DRDR.VIRGINIA.EDU) is an academic site with a variety of environmental information sources in simple menu form. One of its databases, The Ecogopher Project, presents an expanded list of chemicals and risk assessment information beyond that required by 29 CFR 1910.1200. The database details the health effects of different chemicals, recommended medical tests to be run in the event of personal exposure and applicable engineering controls – in language that is much more user-friendly than Material Safety Data Sheets. The files could be a practical addition to MSDS's held in house.

A straightforward query tool provides access to databases on the site. Another area, the Ecogopher Reactive List, offers an Innovative Technologies Program which solicits Problem/Solution Case Studies for publication and electronic peer review. The Program accepts papers on all facets of the EHS domain.

Econet (HTTP://WWW.IGC.APC.ORG/IGC/WWW.TOXIC) deserves mention for its Right to Know computer network, RTK Net. This service is a valuable source of risk information for loan officers or realtors conducting Transaction Screens and Phase I Environmental Site Assessments. The Emergency Response Notification System (ERNS), (searches of which are required in ASTM Assessment Standards) is available on site. Beyond ASTM requirements, RTK Net Provides data from the Facility Index Data System (FINDS) and the Toxic Release Inventory (TRI) to allow for a more comprehensive property evaluation. There are also toxic emissions and health hazards lists available.

EE>Link (HTTP://WWW.NCEET.SNRE.UMICH.EDU) is a project of the National Consortium for Environmental Education and Training (NCEET). This project is funded by the EPA and provides "resources of special interest" to those who teach about environment issues. The service offers data on the methods of obtaining EPA Small Grants up to $250,000. Grant history is traced state by state. EE>Link also provides menus for U.S. Department of Agriculture data, toxic chemical profiles (ToxFAQs) and a pesticide information (PESTIS). Classroom and environmental education resources provide a marketplace for ideas and new methodologies. There is an online discussion forum.

The Office of Resources Conservation and Assessment / NOAA (HTTP: // SEASERVER.NOS.NOAA.GOV/ORGANIZATION/ORCA.HTML) maintains a comprehensive site that synthesizes research and spill response data applicable to the nation's estuaries and coastal areas. The site's HAZMAT Division, originally an oil spill effort, now includes chemicals and hazardous waste sites affecting estuaries. It provides data for spill preventions, response and planning. The Modeling and Simulation Studies Branch is a source for spill trajectory analysis and real time application of the Computer Aided Management of Emergency Operations (CAMEO) System. The site also maintains a Damage Assessment Center, implemented during the VALDEZ release, which conducts material resource damage assessment.

This is by no means a complete review of the EH&S Sites out there. Many EH&S vendors have sites. "Newsgroups," bulletin boards that provide a forum for discussion, include a full range of topics such as land use, sustainable development and environmental justice. Local use of cyberspace is becoming a useful tool in managing and bonding local communities. The city of Blacksburg, Va. now conducts some local business online and provides citizens with an electronic forum for responsible debate. The state of North Carolina broadcasts "An Electronic Citizens Handbook for Environmental Information Sources."

The net has potential to reduce cost, paperwork and improve timely access to useable data. The impact of this electronic linking has yet to be fully realized – but there is little doubt that it is a conceptual tool comparable with the invention of the printing press. EP

Kenneth C. Taylor, CET, is programs coordinator for the Environmental Training Group of Columbia, Md. His online address is Casey@ATC.AMERTEL.NET.

Think Positive

A Moment on Earth: The Coming Age of Environmental Optimism

By Gregg Easterbrook

Viking, 745 pp.; $27.95

Gregg Easterbrook, who specializes in environmental news at *Newsweek* magazine, reminds readers in the foreword of his 700-page epic that he has been a longtime observer of the environmental movement and the media's relationship to it. To those who buy the conservative line about a "liberal media" bias, the proviso seems likely to precede another in a long list of environmentalist diatribes that have become a cottage industry among book publishers in recent years.

But Easterbrook's thesis that American environmentalists have relied too heavily on doomsday, worst-case-scenarios of the state of the environment – at the expense of some notable accomplishments – turns this publishing trend on its head.

"I have trouble fathoming why guarded optimism about the environment is politically incorrect," Easterbrook notes in his review of major environmental issues of the past decade, including ozone depletion, acid rain, water quality and numerous other areas.

Industry readers will be pleased to hear some good news about hard-fought environmental gains. And Easterbrook, who dubs his philosophy "ecorealism," provides an upbeat analysis throughout his revisionist treatise. Indeed, a continued doom and gloom emphasis will have a negative impact on future efforts to clean up the environment, he warns.

Media has played no small part in this environmental pessimism, Easterbrook acknowledges. In the early days of the environmental movement, "when [environmentalists] were outsiders, could they have caught the attention of Congress on subjects like landfill liner or protection of marine mammals . . . or any of a hundred ecological areas unless they overstated? Probably not." But a largely uncritical press has helped fuel pessimism about our ecological future by overstating the problems and overlooking progress that has been made, he adds.

"Commentators meet the claims of industrialists and government officials with skepticism," he says, "discounting, as is proper, for self-interests in the outcome. In contrast, the pronouncements of green figures have been treated as beyond reproach." The luxury of their claims being uncriticized is counterproductive, he argues. "If you love environmentalists . . . today the greatest favor you can do them is to toss cold water on their heads."

In no particular order, Easterbrook tackles one environmental issue after another, presenting background, statistics, and responses from environmentalists, industry and government. With each, he highlights the failures of the environmental community to present a balanced, accurate assessment of the problem and potential solutions.

The author goes out of his way to acknowledge the successes of such regulatory programs as the Clean Air Act and the National Pollutant Discharge Elimination System permits. He even gives as occasional nod to some industries for their successful efforts in such under-publicized programs as 33/50. But disparaging comments about corporate polluters are the rule, with industry accomplishments presented as the natural outcome of regulatory and activist pressures.

Environmental organizations have been quick to respond to Easterbrook's salvo. The Environmental Defense Fund has pointed out several errors in Easterbrook's statistics – such as the author's mistaken use of Fahrenheit readings, rather than Celsius, in suggesting that global warming is not a serious threat. EDF also sharply criticizes the book's references to DDT, whose effects, Easterbrook suggests "are nearly gone from the biosphere." EDF cites numerous recent EPA studies proving otherwise – and promises more lengthy analyses, soon, of other issues Easterbrook has addressed.

Harsh words have also come from Peter Raven, the current Home Secretary of the National Academy of Sciences. Responding independently – not as an NAS spokesperson – Raven says that Easterbrook has adopted a "simplistic, superficially palatable view of the world, one in which industrialized countries are seen as having virtually solved their problems while the others will eventually rise to our level."

In part, the rush to rebut reflects an environmental movement on the defensive in a hostile political climate. But it inadvertently serves to legitimize and promote what former EPA administrator William Reilly calls "the most influential book since *Silent Spring*." At the very least, *A Moment on the Earth* brings to the forefront the question of environmental progress in the quarter century since EPA's creation – at a time when environmental regulation faces a ground-up appraisal from a regulation-wary Congress.

And for noting the environmental progress that has been made on everything from ozone depletion to water quality – progress that the environmental movement deserves and receives some credit for – environmental activists should themselves be grateful. EP

Beth Cahape is an Associate Editor with Environmental Protection.

EVENTS CALENDAR

JUNE 10–13
20th Annual Conference and Exposition *(Sponsored by the National Association of Environmental Professionals)*
LOCATION: *Washington, D.C.*
A multidisciplinary information forum for environmental professionals, plus a NEPA symposium; 600 attendees; $425 members, $520 nonmembers. Contact Louisa Barker at 202/966-1500.

JUNE 14–16
HazMat International '95 Environmental Management & Technology Conference and Exhibition *(Sponsored by* Environmental Solutions Magazine*)*
LOCATION: *Philadelphia*
Focuses on management and regulatory trends, compliance, technologies, and financial opportunities in all areas of environmental management; 15,000 attendees; $445/individual, plus workshop fees. For details, call 800/331-5706.

JUNE 17–24
Safety on Parade: Come Share the Magic *(Sponsored by American Society of Safety Engineers)*
LOCATION: *Orlando, Fla.*
A wide overview of safety issues – including HazMat emergencies, OSHA and NIOSH guidelines – for safety, health and environmental professionals; 2,500 attendees; $620/members, $755/nonmembers. Call 708/692-4121, ext. 223 for details.

JUNE 18–22
Good As Gold: AWWA Annual Conference and Exposition *(Sponsored by American Water Works Association)*
LOCATION: *Anaheim, Calif.*
Technical sessions, facility tours, and an exposition highlight this conference for drinking water professionals; 10,000 attendees; $575/members, $655/nonmembers. For more information, contact AWWA Meetings Dept. at (303) 347-6160.

JUNE 18–23
Global Environmental Management: Issues and Initiatives *(Sponsored by Air and Waste Management Assoc.)*
LOCATION: *San Antonio, Texas*
The 88th annual meeting and exhibition of A&WMA, with a focus on news, technologies, and other pertinent issues for environmental professionals in the fields of air, water and waste; 7,000 attendees; $435/members, $530/nonmembers. For details, call 412/232-3445.

JUNE 25–28
Automating to Improve Water Quality *(Sponsored by Water Environment Federation)*
LOCATION: *Minneapolis*
The latest in computer technologies for wastewater treatment processes and facilities; 200 attendees; $475/members, $565/nonmembers. For information, call 800/666-0206.

JUNE 26–30
Sampling, On-Site Analysis and Sample Preparation Conference *(Sponsored by Professional Analytical and Consulting Services, Inc.)*
LOCATION: *Pittsburgh*
Focusses on regulatory and technical aspects of laboratory sampling requirement; 100 attendees; $599/individual. For further information, call 412/457-6576.

JULY 11–14
National Environmental Management and Software Technologies Congress *(Sponsored by IBC and* Environment Today*)*
LOCATION: *Boston, Mass.*
Major technologies, corporate environmental information strategies, and product showcase and demonstrations highlighted; 200 attendees; $1,190 for conference & workshops. Contact 508/481-6400 for further details.

JULY 23–26
The 4th Annual Residuals/Biosolids Conference *(Sponsored by Water Environment Federation and American Water Works Association)*
LOCATION: *Kansas City, Mo.*
Emphasizes the technologies, economics, regulations, and public issues of biosolids and residuals management; 600 attendees; $450/members, $540/nonmembers. Call 800/666-0206 for information.

* * * * *

EDITOR'S NOTE: Registration fees are the standard rates. Readers should contact conference sponsors for member discounts and special rates.

NEWS UPDATE

continued from page 13

CBO: Superfund Liability Reform Could Add Billions

Repealing Superfund's retroactive liability system could cost taxpayers $1.6 billion a year, the nonpartisan Congressional Budget Office said in a report.

As lawmakers search for ways to streamline Superfund, their sights have been trained on the liability system, which many GOP congressmen see as the chief problem in a program that needs repair. But CBO found that repealing retroactive liability could shift a considerable burden from private polluters to cash-strapped federal and local governments.

CBO estimated that transaction costs – mainly litigation – represent 27 percent of expenses incurred in Superfund cleanups, numbers that support the widely held belief that attorneys' fees are bloating the program. (Earlier Rand studies set that figure at 36 percent for money spent between 1980 and 1991.)

The finding could spell trouble for the repeal effort, just as Republicans are preparing a bill for introduction.

CBO also found that repeal of retroactive liability for sites polluted up until 1986 would cut transaction costs by about $1 billion a year. Going back to repeal it for sites polluted only up until 1981 would yield much less savings and possibly even increase transaction costs, CBO found.

But CBO's main finding pertained to the movement of costs under the liability repeal scenario. "Given that the cleanup plans EPA issues for each site tend to underestimate actual costs, that shift could amount to $1.6 billion annually for a 1987 cutoff or $1.3 billion for a 1981 cutoff," said Jan Paul Acton, assistant director for the Natural Resources and Commerce Division at CBO. "By contrast, the 1995 appropriation for Superfund was $1.4 billion. Such sharp reductions in [potentially responsible party] liabilities would make Superfund largely or almost entirely a public works program."

Democrats also raised questions about those companies that have already paid for cleanups. CBO found that under a repealed retroactive liability scenario, reimbursing those companies to keep non-paying polluters from gaining a competitive advantage would cost the government up to $13.5 billion for a 1987 cutoff and up to $9.9 billion for a 1981 cutoff.

If they weren't paid back, said Sen. Barbara Boxer (D-Calif.), "they're surely going to sue."

Hazwaste Incineration Decline Result of Recycling Successes

It's no secret that the hazardous waste treatment industry is in a slump. Now, a consultant has taken a crack at explaining how the sector – and destructive incineration in particular – got that way.

The industry's growth has slowed sharply in the 1990s from the robust pace of the 1980s as capacity continues to outstrip utilization and waste stream volumes decline, SRI International consultant Ray Will has found.

NEWS UPDATE

Once considered the prime technology for dealing with hazardous waste, incinerators have fallen behind in the EPA push for "reduce-reuse-recycle," a set of priorities that industry has adopted so well that it now finds itself with a lot of incinerators that are not profitable enough to run, Will said in the report, *Commercial Hazardous Waste Recycling, Treatment and Disposal.*

Citizen opposition, delays in permit approvals, and the push to reduce, reuse and recycle led to incinerators coming on line all at once in the 1990s, Will said. "You end up with a plant ready to go, but other programs [that] reduce the amount" of waste coming in, he said. "The future is not what was expected in the mid-'80s." He noted one glaring example: The industry is closing a plant that just recently received a permit, the Ecova incineration plant in Nebraska.

A steadily growing economy has helped somewhat, he said, but not enough to offset the key factor in all this – cost. "Destructive incineration has the most expense of all the methods for treating waste," Will said. "It's likely that everyone underestimated the ability of industry to be creative and engineers to find new solutions to what was assumed to be the final outcome. People can be very creative, when needed," he said.

Would this have happened absent government regulation? "Regulation is not based on scientific principles," Will said. "It's based on public desires ... attitudes become law."

Landfill Owners Win Time To Show Financial Assurance

Municipal solid waste landfill owners will have two more years to show they can cover the costs of closing their operations, EPA has announced.

EPA extended the compliance date from April 9, 1995 until April 9, 1997, to give localities time to absorb forthcoming EPA financial assurance guidelines for municipal and privately owned facilities. Owners have to demonstrate financial assurance for costs associated with closure, post-closure and corrective action, according to the agency's final rule, published in the April 7 *Federal Register.*

While representatives of small landfill operators welcomed the extension, they remained wary of EPA's plans to allow net worth and bonded value to count as a form of financial assurance. "The only acceptable, legitimate assurance is a trust fund dedicated to a particular facility," said Lanier Hickman, executive director of the Solid Waste Association of North America. "If we base assurances on net worth, we'll be looking at another generation of Superfund sites," said Hickman.

In order to protect taxpayers from future landfill cleanup costs, subtitle D of the Resource Conservation and Recovery Act requires owners and operators of landfills to demonstrate financial assurance through trust funds, surety bonds and letters of credit. However, EPA "does not want people, especially smaller operations, to go through the trouble of setting aside a lot of money *if they're good for it*," said George Garland, chief economist for municipal and industrial waste in EPA's Office of Solid Waste. As a result, the agency has proposed rules that would set alternative financial assurance mechanisms for local governments and corporations, giving them increased flexibility and allowing certain combinations of financial assurances, he said.

EPA Targets 12 Areas of RCRA For Reform

Moving to prepare a key section of the regulatory reform package that President Clinton will submit to Congress this summer, EPA has released a list of 12 areas that may need improvement under the Resource Conservation and Recovery Act.

The list will act as a starting point for stakeholders as they discuss "how to fix provisions of RCRA that currently result in high costs and marginal environmental benefit," said Elliott Laws, EPA's assistant administrator for solid waste and emergency response. The final product of three stakeholder meetings will be a package of "rifle-shot" reforms that Clinton will give to Congress July 15, Laws said.

EPA is particularly interested in hearing comments on RCRA reforms that would allow it to stop short of full hazardous waste regulations for wastes that could be managed under agreements that reduce their risks, said David Hockey, who heads EPA's RCRA legislative reform team. "It's up in the air as to whether we have statutory authority to enter into enforceable agreements," said Hockey. "And we're not sure whether that authority should be limited to management practices, or if it can include [hazardous waste] listings."

Other reform topics on the agenda:

- Whether to allow facilities that only store low-risk hazardous waste to avoid RCRA permit requirements;
- Whether EPA has the authority to defer to alternative protective statutes, such as the Clean Water Act, when the agency addresses hazardous waste management;
- Whether to modify RCRA provisions that prevent the disposal of untreated waste on land unless it can be shown that the waste will not migrate from the unit as long as it remains hazardous. These provisions may prevent the safe disposal of low-risk wastes in certain land-based facilities, namely deep-well injection units, EPA said.

EPA, States to Tap Methane From Landfills

In an effort to reduce greenhouse gas emissions and harness untapped landfill energy, EPA has begun a Landfill Methane Outreach Program.

The effort is one of the agency's six new voluntary partnership programs intended to bring industry, utilities and state regulatory agencies together to expand markets for energy-efficient technologies. As charter members, agencies from Illinois, Maryland, Massachusetts, New Jersey, New York, Pennsylvania, Washington and Wisconsin have signed a memorandum of understanding to "review and explore any unnecessary regulatory, administrative, and other barriers to widespread adoption of energy recovery at landfills."

EPA sees great national potential for gas reclamation projects. Landfills account for 36 percent of known methane emissions, a greenhouse gas 20 times as potent as carbon dioxide, according to the agency. While just 130 landfill energy reclamation projects are currently in operation, EPA, as well as the landfill industry, envisions 600 additional projects creating 7,800 new jobs nationwide.

However, recent Clean Air Act emission standards may become a major roadblock to some landfill gas reclamation projects, said George Jansen, vice president of Laidlaw Gas Recovery Systems, in Newark, Calif. "We have a 3-megawatt project that could capture 6 megawatts ... but state clean air laws would prevent us from utilizing that potential," said Jansen. NOX emissions from the equipment needed to maximize energy capture at Laidlaw's Plainville,

Mass., landfill, combined with emissions from required flares, would put the facility over the Clean Air Act's yearly 50-ton emission limit for new sources of NO_x, Jansen said. Exceeding that threshold would require the company to conduct costly environmental impact statements, he said.

What's a Waste? EPA Report Seeks Better Definition

With one eye on President Clinton's plan to reinvent environmental regulations, EPA's Office of Solid Waste has released its plan for defining solid waste. The plan maps out a schedule for four separate rules that will clarify which materials need RCRA solid waste regulations and which processes qualify as either legitimate recycling or manufacturing outside of the act's purview.

The plan's core proposal, scheduled to appear in the *Federal Register* by summer of 1996, will include specific exclusions from RCRA for materials found to be more like commodities than wastes. These materials could be moved and used across sectors without RCRA controls, EPA said in the plan. The exclusions would apply to materials that have been partially reclaimed, but are not yet finished products, EPA said.

For example, one possible candidate, electroplating sludge with high levels of copper and low levels of hazardous constituents, is often simply processed by a primary copper plant, the agency said. As part of the rule, EPA may craft a list of recognized secondary materials considered to be commodities that would not be covered by RCRA regulation.

The plan comes on the heels of a report from the Office of Solid Waste calling RCRA "not user-friendly" and part of a "convoluted regulatory scheme." The analysis, requested by President Clinton as part of his Reinventing Environmental Regulation initiative, stated that 12 RCRA regulations are "obsolete," 34 are either being revised or planned for revisions, 31 need further investigation and 20 need no action. However, the definition of solid waste process should "provide many of the regulatory fixes needed in RCRA," said James O'Leary, who is heading Clinton's regulatory reinvention effort for EPA.

NO_x Rule Will Achieve Lower Emissions, EPA Says

A new acid rain rule will cut annual NO_x emissions by 350,000 tons annually beginning in 1996 and by 1.6 million tons annually beginning in 2000, EPA says.

NO_x is one of the main ingredients in acid rain. The rule modifies EPA's original NO_x standards that were issued March 22, 1994. It was then that the National Coal Association – now the National Mining Association – and utility industry groups sued the agency, arguing that some of the rule's implementation requirements were too strict. The 2nd U.S. Circuit Court of Appeals then sent the rule back to EPA for revision.

After EPA, the Utility Air Regulatory Group, the National Mining Association and the Natural Resources Defense Council negotiated changes to the rule, the agency revised certain parts, namely the definition of "low NOx burner technology." EPA lifted the requirement that wall-fired and tangentially fired boilers must use an "over-the-fire" process to be eligible for a standard easier than the one in the March 22 rule. The agency also extended the NOx emission compliance date from Jan. 1, 1995, to Jan. 1, 1996.

The more lenient low NO_x burner technology rules are "what Congress intended to begin with and they are reasonable," said Craig Harrison, a lawyer with the Washington firm of Hunton and Williams, which represents the Utility Air Regulatory Group.

The rule appeared in the April 13 *Federal Register*.

Zero Discharge Bill Introduced in Senate

Pulp and paper makers would need to end chlorine discharges into surface water within five years under a bill introduced on April 5 by Rep. Bill Richardson (D-N.M.) The so-called "zero-discharge" legislation, HR 1400, would also ban organochlorine compounds, byproducts and metabolites, which are formed when the compounds break down.

Bleaching pulp and paper sends 1,000 distinct organochlorines into the environment, but EPA regulates only three—dioxin, furan and chloroform, Richardson said. He has 30 co-sponsors for the bill, which is identical to HR 2898, a bill he introduced in the previous Congress without success. The American Public Health Association called for reduced chlorine discharges in a resolution passed by the 30,000-member group in 1993, Richardson said.

Flow Control Measure Sweeps Through Senate

One year after the Supreme Court ruled that cities cannot require haulers to take their solid waste to designated facilities, the Senate overwhelmingly approved a bill to protect for 30 years those flow controls arranged before May 15, 1994, the date of that decision. The bill (S. 534), which passed 94-6, also would give governors the power to limit the amount of municipal solid waste entering their states.

Specifically, S. 534 would grandfather for 30 years flow controls in municipalities that have contracts or secured revenue bonds to pay for a facility planned with flow controls. Over $20 billion in municipal bonds have been issued nationwide to pay for such facilities.

The bill also would give governors the power to freeze out-of-state waste shipments at 1993 levels and ban waste imports at facilities that did not accept out-of-state waste that year, unless the host community approves the waste imports. The bill also would establish a cap, starting at 3.5 million tons in 1996, on waste leaving any state.

The House of Representatives subcommittee approved a similar version of a flow control bill a couple of days after the Senate vote. The House Commerce Committee expects to take up the measure this month.

Universal Waste Rule Issued

EPA is giving states greater flexibility in how they regulate a large category of hazardous wastes, including thermometers containing mercury, batteries and some pesticides by letting retailers and other businesses set up convenient collection centers.

The Clinton administration estimates the

move could save $70 million in compliance costs and 500,000 paperwork hours. The final Universal Waste Rule was published in the May 11 Federal Register. "Universal wastes" in this case means wastes generated widely but in small amounts.

"Although households and small businesses produce much of these wastes, retailers were previously reluctant to accept them because of concerns that some of the wastes might be from regulated hazardous waste generators," EPA said in a fact sheet on the rule. "If that were the case, all of the collected wastes would be subject to full RCRA Subtitle C regulation."

But under the streamlining in the rule, retailers and others who generate these wastes would not have to comply with Subtitle C paperwork requirements and certain technical standards. Nonetheless, EPA is expecting the rule to increase environmental protection by boosting availability of collection sites, which will ensure these wastes wind up in hazwaste recycling and disposal facilities rather than going into common garbage cans and hence, solid waste landfills, the fact sheet said.

"It's common sense to give Americans — and American businesses — easy ways to recycle products that may pose hazards in our homes and in our environment," EPA Administrator Carol Browner said. EPA said many states and industries, particularly makers of battery-operated tools, support the move. EPA is hoping this rule will act as a model for future streamlining efforts. Call the RCRA Hotline at (800) 424-9346.

"Enforceable Agreements" to be Explored By EPA

This summer EPA will select whole industrial sectors to participate in an experimental regulatory program intended to save industry time and money. But questions remain about whether the agency has the legal authority to develop the program.

EPA's "alternative strategies for sectors" program, part of the Clinton administration's "reinventing government" initiative, will use industry-wide agreements to complement or replace current "command-and-control requirements," EPA Deputy Administrator Fred Hansen said at a Washington conference last month. Under the alternative strategies for sectors program, chosen sectors will enter into "legally binding agreements" tailored to their industry, Hansen said. "We're going to select a few industries, review the entire set of environmental requirements they are subject to, and then ... design an alternative comprehensive approach that gets more environmental benefits at least cost," Hansen said.

Industry is encouraged by such reform efforts, but some legal experts question whether EPA has legal authority to exempt industries from existing regulations. Compliance orders and enforceable agreements are "traditionally used for getting a company into compliance with a requirement rather than changing the substance of a requirement," said E. Donald Elliott, an attorney with Fried, Frank, Harris, Shriver & Jacobson, and general counsel for EPA during the Bush Administration. "I would like to see them [EPA] find a way to make it work ... but right now it sounds like they're going to use compliance order power to say you never have to get into compliance."

While conceding the agency is "a bit nervous" about developing a program based on compliance agreements, Charles Openchowski of EPA's Office of General Counsel said EPA has a solid history of enforceable agreements rooted in the Superfund program.

Most Airborne Dioxin Comes From Combustion

Industrial combustion accounts for 70 percent of all air deposition of dioxin in the Great Lakes, according to a new scientific report from the Center for the Biology of Natural Systems, headed by environmental scientist Barry Commoner. The data back up EPA's draft dioxin reassessment, which also called combustion the main source of dioxin emissions, but Commoner said the report is significant because it provides evidence of long-range transport of dioxin.

The report used estimates of dioxin emissions from about 1,300 sources nationally to determine, using a computer model, how much each source contributes to the Great Lakes. The report concluded that medical waste incinerators contribute 48 percent of dioxin to the lakes, followed by municipal waste incinerators at 22 percent, iron ore sintering at 8.4 percent, and cement kilns that burn hazardous waste at 7.6 percent. Secondary copper smelting, coal combustion and wood combustion account for another 8.7 percent.

Data on waterborne dioxin are much less reliable than the air data, the report said. Generally, it found that water loadings of dioxin were much less than air deposition.

EPA is trying to finish a dioxin reassessment by the end of the year, officials said.

HWIR Deadline Set For Aug. 15

A U.S. District Court has set a deadline of Aug. 15 for EPA to propose its Hazardous Waste Identification Rule, and December 1996 as the deadline for the final rule.

Meanwhile, a key industry source said EPA is moving away from imposing a 60-day waiting period that was suggested by a federal advisory committee for hazardous wastes exiting the RCRA Subtitle C system.

"We see the 60-day waiting period gone now," said Doug MacMillan, executive director of the Environmental Technology Council. "The thinking there was that the waiting period gave regulators a chance to review some percentage of exit claims. EPA apparently is now leaning toward a process where [the waste] exit is immediately effective – the same day as the generator sends in the waste [test] results."

This approach – generally called self-certification, in which operators identify a waste as Subtitle D and dispose of it as such – is due to resource constraints, he said. Simultaneously, waste generators would submit an "exit petition" for the waste.

MacMillan believes this approach could undermine public confidence in the safety of the waste exiting the system and could lead to a patchwork of different state waste exit requirements. MacMillan has suggested some sort of "pre-exit" approval for those wastes is needed.

NEWS UPDATE

States Miss RCRA Permit Deadlines

States are having trouble meeting EPA's targets for issuing permits, inspecting facilities and ensuring compliance under Subtitle C of the Resource Conservation and Recovery Act, a new study has found.

"Overall, state RCRA managers report that their respective staff are stretched too thinly to adequately implement many important parts of the RCRA program," the General Accounting Office said in "EPA and the States: Environmental Challenges Require a Better Working Relationship." In particular, states have had difficulty implementing the portion of RCRA that applies to boilers and industrial furnaces, GAO said.

GAO, the investigative arm of Congress, found that inspections at RCRA facilities are a key means of ensuring facility compliance and, in the process, preventing releases of hazardous wastes. But state environmental program managers contacted for the study said they have had difficulty completing inspections in recent years. For example, Louisiana finished only three of seven scheduled inspections last year at commercial disposal sites. And Arkansas, as of July 1994, had completed only 17 of 29 compliance monitoring inspections targeted for completion by mid-1994, GAO said.

Meanwhile, GAO found that states are having trouble meeting the established criteria for timely enforcement, as well – even for top-shelf RCRA violations. One state, for example, had 17 high-priority violations that had not been addressed with a formal action as required by EPA. Of those, 16 were older than the 135-day limit set by this policy.

EPA Issues New Enforcement Policy

EPA issued a new policy that it said will give the agency more flexibility in penalizing companies for violations of environmental laws.

The new policy, published in the May 10 *Federal Register*, tries to reduce confusion over the use of supplemental environmental projects, or SEPs. In return for conducting a SEP, which is often a project designed to reduce pollution at a facility, EPA will lower the fine it gives the company. EPA has increased the use of SEPs in the past few years, but it said the 1991 policy was "too cumbersome, rigid and difficult to understand and apply."

Violators are responsible for proposing SEPs, the "caveat" being that the projects "must go beyond a company just coming into compliance" before the agency will approve the SEP, said Peter Moore, a lawyer in EPA's Multimedia Enforcement Division.

"We're hoping this will encourage industry and the regulated community to come forth with proposed projects early in the negotiation process if possible," Moore said. "There's an emphasis on projects that prevent and reduce pollution or restore fragile ecosystems." The policy was implemented on an interim basis May 8 and is open to comment until Aug. 6.

Examples of SEPs include assessments and audits, and environmental compliance promotion such as training or technical support to other members of the regulated community to achieve compliance, avoid violations, and reduce emissions. EP

PRODUCT SHOWCASE

The following products will be featured at the HazMat '95 conference, June 14-16 in Philadelphia, or the Air & Waste Management Association annual meeting, June 18-23 in San Antonio.

CD-ROM State Regs

Counterpoint Publishing offers a 50-state compilation of environmental regulations in a CD-ROM package. Offered on a monthly, quarterly or annual basis, all relevant rules are covered in detail. Permit searching is done by table of contents reference, or words and phrases with boolean operators. Excerpts download to any word processor, floppy, e-mail system or network.

HazMat show, booth #1521.
Counterpoint Publishing

Circle 60 on card.

Odor Neutralizers

Odor neutralizers from Epoleon deodorize more than one type of gas. Can be used to neutralize in scrubber systems, wastewater and sludge treatment. Also appropriate for landfill applications.

A&WMA show, booth #637.
Epoleon Corp. of America

Circle 61 on card.

Leak Detection System

Three companies offering fugitive emissions monitoring technologies have joined forces to create a new system for leak detection, recording and reporting. Those companies are Brady, FEC and Foxboro, and the system is called LeakTracker. Fully integrated and automated, it combines data collection and gas detection. Hand-held computer workstation records time, date and location information from either machine-readable barcode tags or the new radio frequency (RF) tags.

A&WMA show, booth #907.
Brady

Circle 62 on card.

Air Modeling Courses

Air dispersion modeling courses for novice and advanced modelers will be held in select U.S. cities from June-December 1995. Offered by BEE-Line Training, these courses will include permitting and advanced topics, as well as toxic emergency release modeling. Each topic is applied to an actual modeling situation.

A&WMA show, booth #2165.
BEE-Line Training

Circle 63 on card.

Gas Standards Generator

Designed for field mounting with process analyzers, Span Pac I industrial standards generator uses a Trace Source permeation tube to produce precise calibration gas mixtures. Concentrations from low ppb to over 1000 ppm are generated directly from the pure component. Housed in a rugged NEMA 4 specification cabinet for N.E.C. Class 1, Group C or D, Div. II hazardous atmospheres, this unit can be operated from a remote station.

A&WMA show, booth #831.
KIN-TEK Laboratories, Inc.

Circle 64 on card.

Compact Fume Extraction

The Multi Arm-Evac economically removes harmful fumes in the workplace. Suits a variety of fume extraction arms, plenums, and accessories. Can fit on or under a workbench. Installation is quick; the unit is operational within minutes. Has a maintenance-free brushless motor and quiet operation. Filtration efficiencies of up to 99.997 percent are available.

A&WMA show, booth #2100.
Pace, Inc.

Circle 65 on card.

Electrostatic Precipitators

Air pollution control for a variety of industries is possible with electrostatic precipitators from United McGill. Designed for furnaces, boilers and incinerators, these are smaller than standard units. Operating costs are reduced because they consume 70 percent less power via a patented discharge electrode that provides consistent particulate collection. A high-voltage rapping system reduces maintenance costs, as well.

A&WMA show, booth #2028.
United McGill Corp.

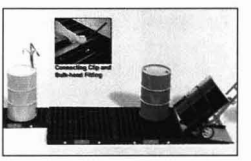
Circle 87 on card.

Qualitative Fit Tests

The new Saccharin Qualitative Fit Test Kit performs fit tests for quarter-masks, half-masks and full-face respirators. Made in accordance with OSHA protocol. Each kit contains a test hood, two nebulizer bulbs, fit test solution, sensitivity solution and two sets of replacement nebulizer inserts.

HazMat show, booth #407.
MSA (Mine Safety Appliances)

Circle 88 on card.



Modular Spill Deck

A new sectional system allows users to create custom containment decks. The Modular Spill Deck allows for numerous configurations. Bulk-head connections make for easy attachment of two or more decks. Developed to help meet federal sump capacity regulations for containment systems.

HazMat show, booth #806.
New Pig Corp.

Circle 89 on card.

Salvage Drums

Polyethylene containers from UltraTech International can be used for overpacking damaged or leaking packages, clean-up of contaminated sites, spill kits, incineration and direct containment of hazardous solids. Ultra-Overpacks are available in 30, 55, and 95-gallon capacities.

HazMat show, booth #938.
UltraTech International, Inc.

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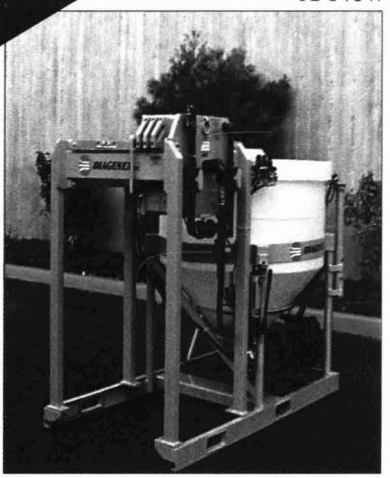
PRODUCTS & SERVICES

A New Way to Control Solids Disposal

EP Exclusive



Controlling wastewater and wet solids disposal problems can now be done more economically with the newly introduced FiltraPak LHS solids removal system. Offered by Diagenex Inc. of Livermore, CA, these units were initially marketed as customized packages. Now, after more than a year of development, standardized versions of these systems are available for companies who must specifically deal with small batch processing or other applications that require conditioning prior to separation of the liquids and solids.

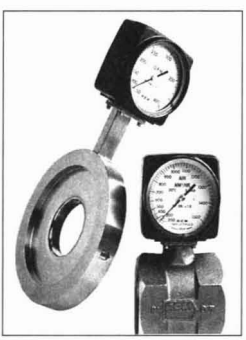
"The most remarkable thing about this system is that it is complete and cost-effective in terms of installation, operation, and maintenance," says Dan Roberts, vice president of marketing for Diagenex.

Systems are available in 200, 350 and 500-gallon capacities and are delivered, completely assembled on a steel-fabricated skid. Fully-integrated controls are easy to use and minimizes operator intervention.

"Each unit is complete and compact, so that it can be brought onsite and integrated into a waste stream collection system with minimal effort," says Roberts. "Basically, once you get it onsite, you plug in a few lines and you're running," he adds.

Roberts emphasizes that FiltraPak systems are also cost-effective in operation and maintenance. "They're a proven solution to a great number of companies' concerns and frustrations regarding waste treatment and liquid-solids separation challenges."

Circle 66 on card.



Flow Meter Series

RCM Industries has introduced a new series of products to measure larger flow rates. Suitable for measuring water, oils and contaminants – as well as gases and compressed air – the wafer-style Series 8000 Flo-Gage indicates the flow rate on a large 3.5" analog dial with 270 degree pointer movement. Measurements are based on differential pressure across a calibrated nozzle. Flow rates can be track up to 3,000 gpm for water and 20,000 SCFM for air. According to the manufacturer, this series offers rugged, reliable and economical measurement. These meters are self powered and need no external electrical connections.

RCM Industries, Inc.

Circle 67 on card.

Water Probe Smallest on the Market

A multi-parameter water quality probe from Stevens Water Monitoring Systems allows clients to simultaneously monitor pH, dissolved oxygen, conductivity and temperature. According to the manufacturer, the AxSys Probe is the smallest diameter water quality probe on the market. Fully submersible to depths of 200 feet, its microprocessor controlled operation allows for fully compensated performance at all times and conditions. Sensor head can be easily replaced and calibrated in the field .

Stevens Water Monitoring Systems

Circle 68 on card.

VOC Adsorb/Desorb System

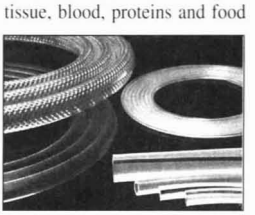
A new onsite adsorb/desorb system for VOC removal offers a numerous design improvements over earlier models. The PADRE A3000 from Purus incorporates a heating system – to heat the entire bed for condensation prevention – with an acid trap to reduce corrosion. The desorption capacity of the bed has been tripled, too. A pre-condenser to improve condensation capacity has been added: especially important in hot climates. Like previous systems, this product adsorbs VOCs (in the air phase) on synthetic resins, then desorbs these using heat and vacuum, condensed into a liquid and transferred to a storage tank for recycling. All done in a continuous computer-controlled operation. Used with success in a wide range of applications, including soil and groundwater remediation and industrial air and wastewater treatment involving chlorinated solvents, ketones, hydrocarbons, acrylates and other VOCs.

Purus Inc.

Circle 69 on card.

Silicon Tubing

Nalge Company has introduced a new tubing that contains no plasticizers and is non-toxic, non-pyrogenic and non-hemolytic. NALGENE 550 and 560 platinum-cured silicone tubing is recommended for use by a variety of industries, including laboratories, bioprocess manufacturers and the peristaltic pumps industries. Designed for pump and transfer applications, these are flexible and durable, as well as translucent, to resist the adhesion of tissue, blood, proteins and food products. According to the manufacturer, no odor or taste is imparted to fluids. All tubing is sterilizable, double-bagged and packaged in 25-foot lengths.



Nalge Co.

Circle 70 on card.

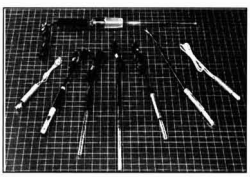
Liquid Storage

A solution to liquid storage problems, the Terra Tank combines portability, versatility and economy. According to the manufacturer, Exploration Products, these tanks are both lightweight and collapsible. Addresses problems of evaporation, oxidation, condensation and contamination, and they are available in a full range of sizes

and three different fabrics for chemicals, fuels or potable aqua.

Exploration Products Inc.

Circle 71 on card.

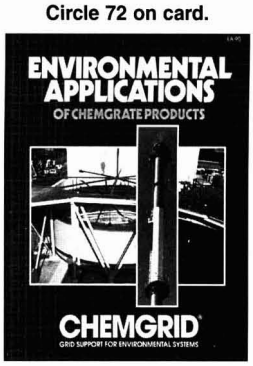


Engineering Light Sources

The Pen-Ray Mercury Light Source, from UVP, Inc., can be custom engineered for a variety of applications, including spectral calibration, photochemistry, sterilization, and fluorescence. Among the special options available are lighted lengths and configurations, handle types, connectors and cords, as well as energy emission requirements relating to certain wavelengths and target distances. These can range from ultra-miniature calibration lamps to zinc and cadmium lamps, rare gas lamps and grid lamps. Options can also include ozone free/ozone producing, phosphor coating and cobalt jacket. Manufacturer also offers appropriate power supplies to provide proper voltage and current for starting and operating lamps.

UVP, Inc.

Circle 72 on card.



Multi-purpose Grids

Chemgrid, a corrosion-resistant fiberglass reinforced polyester grid, is now available in a number of configurations for environmental applications. This includes vessel internals and packing support. Also appropriate as hold-down for scrubber systems and biological reactor media supports and covers. According to the manufacturer, Chemgrate Corporation, these products have a proven value in secondary containment devices designed to prevent ground contamination caused by leaking above-ground storage tanks.

Chemgrate Corp.

Circle 73 on card.

PACIFIC ENVIRONMENTAL SERVICES, INC.

i - STEPS™

Compliance Software

A new environmental data management software system from Pacific Environmental Services Inc. incorporates several new enhancements for inventory management and compliance reporting. Now included in the 3.1 version of i-STEPS are export functions for SCREEN2 and ISC2, both EPA-approved regulatory models. Version 3.1 also offers expanded reporting capabilities, including automatic generation of Automated Toxic Chemical Release Inventory (TRI) and SARA Form R reports, which it automatically prints with all appropriate page headers and facility information. According to the manufacturer, a new and unique Stream Flow view shows the aggregation of emissions from a process unit to the facility's point of exit. Emissions data can be seen from six different views, including all processes/pollutants venting to a particular stack; in a production line or building; or in the facility. An improved graphical user interface and import and export function allows users to transport data into a variety of industry-standard functions.

Pacific Environmental Services, Inc.

Circle 74 on card.

Temporary Structure

Companies that need an economical enclosure for storage at a plant or remote location may

consider Fabric Building Systems' Quik-Span structure. Available in widths of 12, 15 and 20 feet (and widths of up to 200 feet), these translucent fabric structures are made of vinyl-coated polyester over frames of galvanized tubular steel for quick assembly. Designed so that a fork lift can easily maneuver within their confines, they can withstand wind loads of up to 70 mph if anchored as recommended.

Fabric Building Systems Inc.

Circle 75 on card.

Reverse Osmosis System

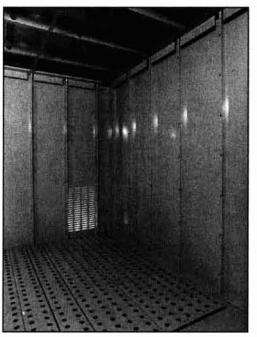
The Disc Tube, from Rochem Environmental, provides high pressure reverse osmosis technology with osmotic pressures of 2,000+ psi achievable – as compared to the 900 psi of standard units. According to the manufacturer, this technology is a major technical development in RO, reducing membrane fouling even in extremely contaminated streams. Rochem also claims permeate recovery rates of over 95% can be obtained from landfill leachate, and at a substantially lower cost than other current technologies. Dirty lagoon water with TOC levels of 2,000 ppm have been treated with this product and reduced to levels of below 55 ppm. Requires no chemical treatment and can be readily configured for completely automated operation.

Rochem Environmental, Inc.

Circle 76 on card.

Hazmat Storage

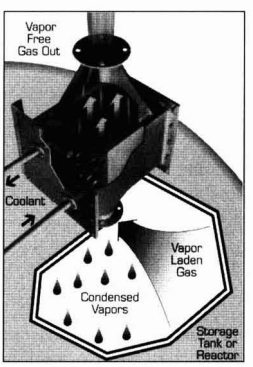
Hazardous material storage buildings in a modular construc-



tion form are available from Environmental Products, Inc. Using fabricated modular panel walls, this design allows customers the flexibility to modify and repair their buildings as needed. Should one sustain damage, those specific damaged areas can be repaired by replacing the modular panel, thus retaining the building's structural integrity. With modular construction, corrosion-resistant coating is applied to both sides of all metal components. This assures uniform, full coverage for both durability and chemical resistance.

Environmental Products, Inc.

Circle 77 on card.



Vent Condensers

Vent condensers, for cooling vent emissions from a storage tank or reactor, offer an economical way to control VOC emissions, and Xchanger Inc. offers such units for flows to 5,000+SCFN and pressures from full vacuum to 15+ PSIG. The TV Series feature a fin-tube core design, with a typical application pressure loss of less than 0.5" water column (.02

PSI). The low pressure loss enables this compact unit to achieve substantial heat transfer. The fin-tube core is easily removed for inspection or cleaning and service media can be liquids, refrigerants or cryogenic fluids. Applications for this product include pollution control and product recovery for such industries as chemical, hydrocarbon processing and pharmaceuticals.
Xchanger, Inc.

Circle 78 on card.

CO Datalogger

A new type of CO datalogger can safely be left onsite for up to five days to help companies track intermittent releases of these and other dangerous gases. The McNeill Model 1500 Datalogger offers a high quality sensor and on-board internal datalogging ability. It's also tamper-proof, with operating controls mounted internally and and an external locking design. According to the manufacturer, McNeill International, this product has a long-life sensor element that has minimal cross-sensitivity to other gases and is virtually unaffected by ambient changes in temperature, humidity, and atmospheric pressure. Optional audio alarms are available.
McNeill International

Circle 79 on card.

Oil/Water Separator

A new fiberglass Oil/Water Separator has been introduced by Xerxes Corporation to meet increasingly strict EPA regs for

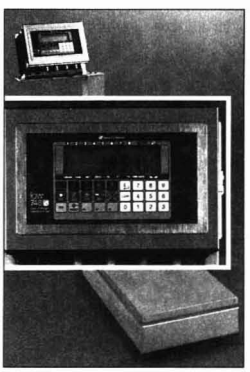
stormwater run-off. Made of corrosion-resistant fiberglass, it's lightweight and long-lasting. A polypropylene vertical tube coalescer provides greater surface area to attract oily water and reduces the need for cleaning. It can remove free-floating oil droplets of 20+ microns and attains effluent quality as low as 10 ppm in approved applications. According to the manufacturer, an innovative design uses the curved dome of the separator as a 360 degree flow defector and the bell-shaped inlet to remove turbulence at the nozzle. Dead sections are eliminated by directing the flow of water and using the full length of the tank. These units can be shipped with brine-filled interstice, offering the extra protection of positive-pressure hydrostatic monitoring.
Xerxes Corp.

Circle 80 on card.

Flow Meter

A new liquid flow meter from Panametrics measures energy flow rates, accepting input from optional clamp-on or wetted RTDs. Featuring two independent user-programmable graphic LCDs, it allows simultaneous display of numerical flow data, real-time flow graphs, diagnostic waveforms, or logged data from the unit's built-in 40,000 point datalogger. Uses clamp-on flow transducer to measure flow rate through metal, plastic or concrete-lined pipes without penetrating the pipe wall. Wetted transducers also available. Accuracy of transit time is typically one to two percent of clamp-on reading and better than one percent with wetted transducers. Measurement range is 0.1 to 40 ft/s for a turndown ratio of 400 to 1 in pipes from .5" to over 200" in diameter, and is non-contaminating, obstructionless and causes no pressure drop.
Panametrics, Inc.

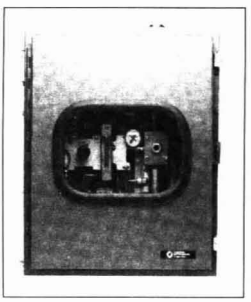
Circle 81 on card.



Heavy-duty Scale

Targeted for the water and wastewater treatment industry, the new LOW 748 Scale has numerous beneficial standard features. With a maximum capacity of 1000 pounds gross, it starts from an initial value and measures the amount of dry material or compressed gas being fed into a system. It's accurate to 0.5 percent of full scale, has a digital readout, and comes in a variety of output signals. Alarm relays can be pre-set to indicate depletion of material. Unit can also be used with an optional circular chart recorder to provide a hard copy historical record of material fed over a 24-hour or 7-day period.
Wallace & Tiernan, Inc.

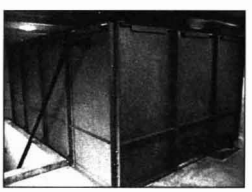
Circle 82 on card.



Vapor Monitor

A new gas detection sensor for continuous solvent vapor monitoring is now available from Control Instruments. Model FFA continuously monitors and records the LFL of vapors emanating from wastes being discharged into the sewage line. Features include universal calibration, which lets users directly monitor many different vapors with a single calibration. According to the manufacturer, it offers complete immunity to contamination, fast response time, infrequent maintenance schedules, and fail-safe operation under all conditions.
Control Instruments Corp.

Circle 83 on card.



Secondary Containment

A new, patented tank containment system has been engineered to fit virtually any space, with assembly possible in square, rectilinear, L, S, or T shapes. The VariTank is designed to fit through doorways, windows, and in basements, tunnels, interior rooms or other hard to reach places. Available in capacities from 200 to 100,000 gallons, these heavy-duty, free-standing tanks are constructed of 6'3" high x 3'6" wide galvanized steel modules. They can be rapidly bolted together with ordinary hand tools. A choice of chemical-resistant flexible membrane liners are available for appropriate use

with water, oil or most commonly-handled liquids, chemicals or corrosive fluids. All tanks can be expanded or reduced in size by adding or subtracting modules and supplying a new fitted liner. Optional steel covers, sight glasses, access hatches and through-the-wall plumbing fittings are available.
ModuTank Inc.

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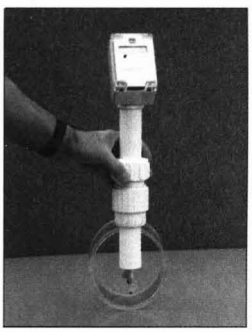

Flow Monitor

Global Water has announced the introduction of the IF200 Insertion Flow Monitor, for use in the water and wastewater industries. A turbo-prop propeller sensor rotates freely on a brass bearing shaft, and an electronic pick-up sensor makes for no mechanical gear systems or cables to cause drag or failure. It is also easily installed. According to the manufacturer, the debris-shedding sensor works well in dirty water, providing reliable measure of flows in full pipes from 2" to 30" in diameter. A battery-powered flow computer displays current flow rate and total flow in any flow unit – including gpm, cfs, m3/sec and acre feet. Internal batteries typically last at least a year. A 2% accuracy and linearity of 0.5% feature suggests it has useful applications in situations where accurate flow measurement for billing and water management are necessary.
Global Water

Circle 85 on card.

Gas Analyzer

For any industry that has fossil fuel combustion exhaust and must perform NOX monitoring, Teledyne Analytical Instruments offers the Model 911 NOX Emissions Gas Analyzer. Using vacuum chemiluminescence spectrometry, the manufacturer suggests this product provides fast, accurate and reliable continuous emissions monitoring of nitrogen oxides in concentrations from 0–10 ppm, up to 0–10,000 ppm. Built as a modular unit, it is housed in industry standard 19" racks with all operational controls contained on the control module

panel. The compact, fully-assembled systems also includes a photo multiplier tube (PMT) detector, reaction chamber, catalytic converter and all necessary flow meters, regulators, valves, and piping. The manufacturer also suggests that it's temperature stabilized PMT detector provides excellent accuracy and compensation for ambient temperature changes.
Teledyne Brown Engineering Analytical Instruments

Circle 86 on card.

continued on page 82

PRODUCT LITERATURE

Data Acquisition Software

DAQ Designer, now updated for 1995 and Windows 3.1, helps determine which hardware and software combinations are best for your PC-based data acquisition system. It will ask questions about your application, analyze your answers to determine your system needs, and describe what hardware you need.

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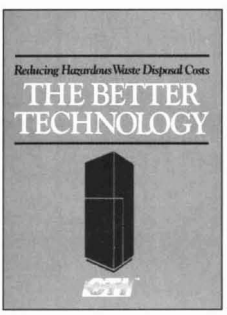

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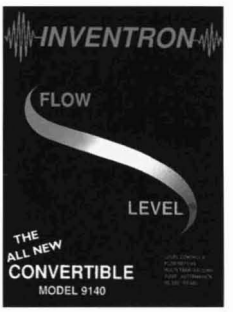

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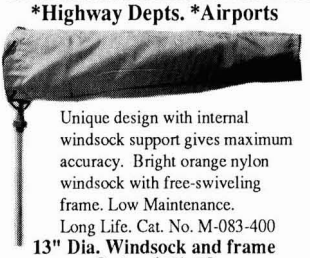

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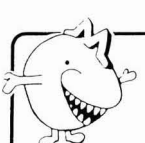

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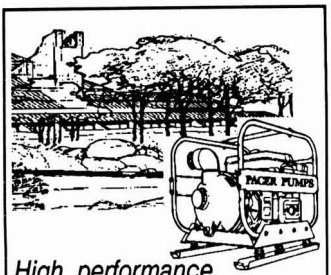

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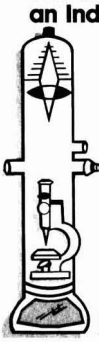

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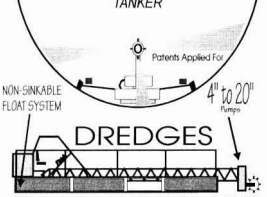

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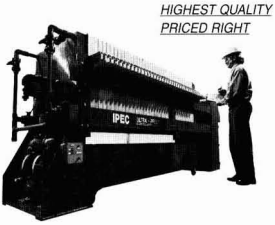

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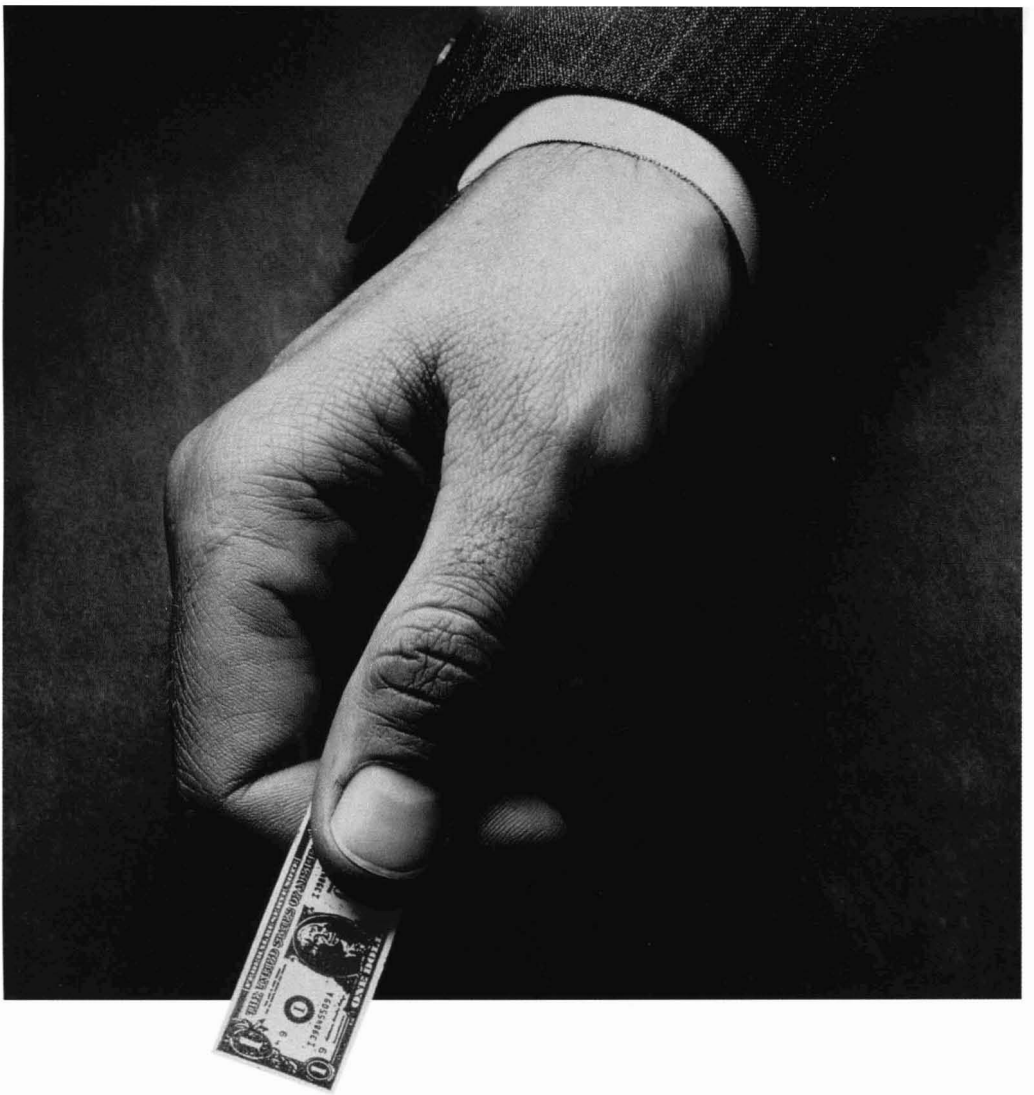
B ☐ Water
C ☐ Noise
D ☐ Solid waste disposal
E ☐ Industrial hygiene
F ☐ Toxic & hazardous material
G ☐ Energy control/energy conservation
H ☐ None of the above _____ (please specify)

6. Which of the following publications do you receive personally addressed to you? (check all that apply):

A ☐ Pollution Engineering
B ☐ Environment Today
C ☐ Hazmat World
D ☐ Pollution Equipment News
E ☐ The National Environmental Journal
F ☐ Water Environment & Technology
G ☐ None of the above _____ (please specify)



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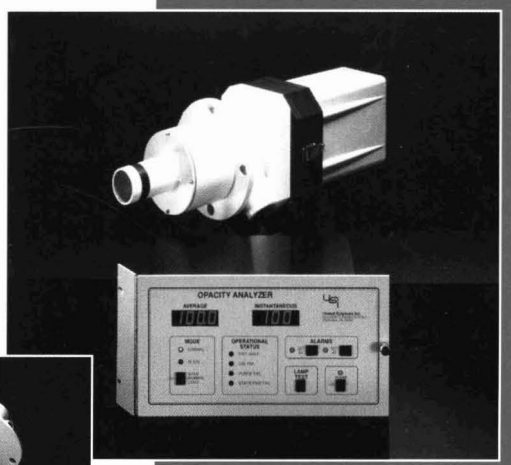

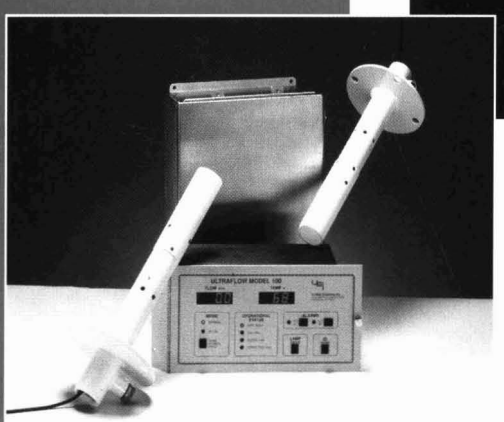

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