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Georgia's New Clean Air Mercury Rule

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Like all states, Georgia has recently developed rules governing emissions of mercury from coal-fired electric steam generating power plants. Unlike many states, however, Georgia engaged in an extensive stakeholder process designed to develop rules that do not directly copy the federal rule they stem from. This paper describes that process and discusses the product of the process, the Georgia Clean Air Mercury Rule (Georgia CAMR).

The Mercury Problem

Mercury is released into the environment from both natural and anthropogenic sources. Mercury in surface waters enters the food chain when it is converted to methylmercury[1] by bacteria. Methylmercury then concentrates in the flesh of fish and other aquatic organisms, eventually threatening human health. Wetlands and coastal "blackwater" streams, both prevalent in Georgia, are, because of their particular chemistry, especially prone to methylmercury formation and concentration.[2] These systems have been coined "hot regions" by the Georgia Environmental Protection Division (EPD) due to the high concentrations of mercury found in the fish of this region.[3]

Mercury in the form of methylmercury is a potent neurotoxin that can severely and permanently damage the human nervous system and kidneys. The most commonly identified at-risk populations are fetuses, breast-fed babies and children. Fetuses and breast-fed babies are exposed to mercury when their mothers eat mercury-tainted fish. Children are exposed to mercury when they ingest mercury-laden fish directly. As the Environmental Protection Agency (EPA) explained in 2000, "[b]ecause the developing fetus is the most sensitive to the effects of methylmercury, the greatest concern is the consumption of mercury contaminated fish by women of childbearing age."[4] Fetuses, breast-fed infants, and children exposed to methylmercury are at risk for lowered intelligence and learning disabilities. In addition, new research suggests that low-level exposure to methylmercury is also associated with adverse effects in adults. For example, adults exposed to methylmercury through consumption of contaminated fish may experience blurred vision as well as numbness of the lips, tongue, fingers and toes.[5] Methylmercury exposure in adults has also been linked to infertility and cardiovascular disease.[6]

EPA has estimated that one in six women of childbearing age have dangerous levels of mercury in their blood.[7] Nationally, between 316,588 and 637,233 children are estimated to be born each year having mercury levels associated with loss of IQ.[8] In Georgia, EPD has estimated that more than 20,000 children within Georgia—15 percent of the total birth[9]—are born each year with blood levels "at or greater than the level of concern related to subtle neurological effects."[10]

The loss of intelligence attributable to

methylmercury causes diminished productivity that lasts a lifetime; this lost productivity has been estimated at $8.7 billion annually in the United States.[11] Of this total, $1.3 billion annually is attributable to mercury emissions from domestic power plants.[12] In addition to lowering IQ, mercury causes other permanent neurological and developmental injuries that drain educational and public healthcare resources and diminish the quality of life for affected children and their families.

The Georgia Department of Natural Resources has issued more than 200 fish consumption advisories for dozens of fish species because of mercury contamination.[13] In fact, mercury currently accounts for 80 percent of the fish advisories limiting consumption in Georgia.[14] Unfortunately, fish consumption advisories are often inadequate to protect public health. For example, the United States Department of Health and Human Services conducted a 1995 study assessing the health of subsistence fishermen in the Florida Everglades. The study found that nearly 30 percent of those surveyed were unfamiliar with the mercury consumption advisories issued for the waters in which they fished.[15] Of those who were aware of the fish advisories, nearly 75 percent failed to change consumption patterns in response.[16]

The solution to the mercury problem, therefore, does not lie in fish advisories, but in reducing the mercury in the environment. A recent EPA study indicates that roughly 70 percent of mercury wet deposition comes from local and regional sources.[17] Accordingly, reductions of mercury emissions from sources in Georgia should have profound effects on mercury levels in Georgia.

Moreover, these effects should be seen quickly. A study by the Florida Department of Environmental Protection demonstrated that reducing emissions from regional waste incineration facilities led to a 50 percent or more reduction in mercury levels in largemouth bass and great egret within 10 years.[18] More recently, fish tissue samples examined by the Massachusetts Department of Environmental Protection found that seven years after Massachusetts enacted the nation's toughest mercury emission laws for incinerators, amounts of the toxic metal have declined by 32 percent in a signature freshwater fish caught near some of those facilities.[19]

Federal Mercury Regulation

The Clean Air Act lists mercury as a Hazardous Air Pollutant (HAP), or air toxic, due to the serious threat it poses to human health and the environment.[20] As a result, airborne mercury emissions from listed sources are generally subject to the strictest Clean Air Act controls—Maximum Achievable Control Technology, or "MACT," standards.[21] Coal-fired power plants are the largest uncontrolled sources of mercury air pollution, emitting approximately 48 tons of mercury into the air every year and accounting for 43 percent of total domestic mercury emissions.[22] Accordingly, in December 2000, EPA added coal- and oil-fired power plants to the list of HAP source categories, finding that MACT requirements for such facilities were "appropriate and necessary" based on a congressionally-mandated study of the public health hazards of HAP emissions from power plants.[23]

In March 2005, EPA reversed course and, without providing new data to support its decision, stated that the regulation of coal- and oil-fired power plants under section 112 was not "appropriate and necessary" after all.[24] Instead, EPA issued a rule that relies on a "cap-and-trade" program similar to the existing acid rain cap-and-trade program.[25] This rule, the "Clean Air Mercury Rule," or "CAMR," was finalized in May 2005. CAMR has been challenged in a pending lawsuit brought by 14 states, various environmental groups, a number of Indian tribes, the American Academy of Pediatrics and several other organizations representing concerned citizens and healthcare professionals.[26]

CAMR set nationwide caps on power plant mercury emissions of (a) 38 tons per year (tpy) for the years 2010-2017 (Phase I), and (b) 15 tpy beginning in 2018 (Phase II),[27] compared to the baseline figure of 48 tons in 1999.[28] These nationwide caps were further allocated among the states; Georgia's allocations, or budgets, were 1.227 tpy in Phase I and 0.484 tpy in Phase II.[29] Toxic Release Inventory (TRI) information indicates that 2004 mercury emissions in Georgia were 3783.5 pounds, or 1.982 tons.[30] Georgia's Phase I and II budgets therefore represent emissions reductions of 35 percent and 74 percent, respectively.

States may allocate their mercury budgets among units as they choose, but at the end of each year, each unit must hold allowances for each ounce of mercury it emits. The CAMR trading program permits units in participating states to buy and sell allowances to comply with this requirement.[31] Under the terms of CAMR, participation in the trading program is optional;[32] however, EPA has actively discouraged states from "opting out" of the program.

Each state must develop a state plan for implementing CAMR and submit it to EPA for approval.[33] As with any state air pollution control program, the plan must be at least as stringent as CAMR but may be more stringent.

Georgia Stakeholder Group Formation and Initial Proposal

In the fall of 2005, EPD convened a stakeholder group, including members of the Georgia environmental community and the utility industry, to help develop the rule Georgia would use to meet its obligations under CAMR.[34] After a couple of meetings, EPD unveiled its first proposal for the Georgia rule in February 2006. This six-page fact sheet[35] proposed two options.

Under Option 1, the state would not participate in the federal trading program and would require statewide emissions limits equivalent to 80 or 85 percent mercury capture efficiency in Phase I and 90 percent capture efficiency in Phase II, which would begin in either 2012 or 2015, rather than 2018 as under the federal rule. The state would be well below its federal CAMR budget in both phases.[36]

Under Option 2, Georgia would adopt the federal program with only minor changes in the methods of allocating allowances within the state.[37]

In retrospect, the inclusion of Option 1 created false hopes within the environmental community. Anything less stringent than Option 1 would be perceived as a loss, when in fact the political (and perhaps technical) reality was that adoption of Option 1 was never truly possible.

Continuing Stakeholder Process

Following the initial proposal, EPD conducted a series of additional stakeholder meetings over the course of 2006 and into 2007. Early on, all parties agreed that a technology-based approach—that is, prescribing what control technologies would be employed—rather than a percent-reduction or percent-control-efficiency approach, would be acceptable. With this issue out of the way, the remaining issues became:

- which units would receive controls and when;
- whether and to what extent Georgia would participate in the federal trading program;
- whether Georgia's emissions caps would be lower or step down earlier than federal caps;
- how credits would be allocated among units;
- how new units would be addressed;
- whether there would be emissions limitations or only operational requirements; and
- whether and when to require a study of the effects of the installed emissions controls.

Each of these issues was extensively negotiated over the course of the stakeholder meetings. For instance, in an early comprehensive "Preliminary Position" paper EPD proposed conducting a "Technology and Mercury Impact Review" that would require a report by 2016.[38] By the end of the process, the report had been pushed back to Dec. 31, 2023, but the scope of the review had become much more detailed.[39] In general, the environmental community supported an earlier study (although it had concerns that 2016 might be too early), whereas utilities wanted no study at all or, at the least, a later study.

In addition to disputes between the environmental community and utilities, there were divisions among environmental groups. For instance, groups with national positions opposing the federal trading program were unable to support in any way a proposal that included participation in the trading program. Other groups considered the trading program an acceptable compromise necessary to achieve the provisions of the state rule that are stronger than the federal rule. Similarly, river conservation groups focusing on the blackwater streams of south Georgia wanted controls on all units, including the small units near the coast, while other groups felt leaving controls off those units was an acceptable concession to ensure utility cooperation on other issues.

Eventually, in December 2006, EPD issued a draft Georgia CAMR.[40] Based on comments from EPA and others, the rule was revised and reissued in April 2007.[41] On June 27, 2007, the Georgia Department of Natural Resources Board formally adopted the Georgia CAMR. The rule will go into effect after it is approved by the EPA, which is not expected to be problematic.

Rule Contents

The Georgia CAMR contains three major provisions, labeled "Multipollutant Control for Electric Utility Steam Generating Units," "Mercury Emissions from New Electric Generating Units," and the "Clean Air Mercury Annual Trading Program."

Multipollutant Control for Electric Utility Steam Generating Units

The "Multipollutant Control for Electric Utility Steam Generating Units," or "Equipment Rule,"[42] is the heart of the Georgia CAMR.

The Equipment Rule first sets out a schedule for installing pollution control equipment at most units in the state.[43] The schedule requires installation of selective catalytic reduction (SCR) and flue gas desulfurization (scrubber) equipment at units burning bituminous coal by deadlines ranging from Dec. 31, 2008, to June 1, 2015. Plant Scherer near Macon, which burns subbituminous coal, must install sorbent injection and baghouses (fabric filters) at all units between June 1, 2009 and April 30, 2010; SCRs and scrubbers must be installed later, with deadlines between Dec. 31, 2011 and Dec. 31, 2014.[44] In each case, this represents the most effective currently available technology for the type of coal being burned. Alternative technology may be installed if the unit owner or operator can demonstrate that it is as effective as the prescribed technology.[45] Installation and operation of controls may be delayed for *force majeure* events.[46]

Once controls are installed, they must be operated within parameters designed to optimize performance unless doing so would not be consistent with good operating practices.[47] Plant Scherer need not operate SCR—which has little or no effect on mercury emissions when burning subbituminous coal—except during the ozone season.[48] However,

there are no emissions limitations (such as limits on pounds of mercury emitted per trillion Btu), a provision the environmental community pushed for.

According to EPD, the rule requires controls on all units larger than 200 megawatts in capacity plus four units smaller than 200 megawatts.[49] EPD further states that by 2010, 70 percent of the generating capacity in the state, accounting for 80 percent of the state-wide power plant mercury emissions, will have controls; by 2015, those numbers will rise to 94 percent of the generating capacity and 93 percent of emissions.[50] It is not yet known precisely how effective the control technology will be, but generally used assumptions range from 80 percent to 95 percent control efficiency. Based on 2004 TRI data, and assuming no changes in production levels, this range would result in decreases in mercury emissions in the range of 70 to 88 percent from 2004 levels.[51]

For units that will not receive controls, EPD assigned a heat input threshold of 20 percent higher than a historical heat input figure. If a unit exceeds that threshold at any time beginning Jan. 1, 2018, the owner or operator must "evaluate the economic and technical feasibility of additional mercury controls"; EPD will review the analysis and determine whether to require controls.[52]

Finally, the Equipment Rule requires a Technology and Mercury Impact Review. Under this provision, EPD must submit a report to the Georgia Department of Natural Resources Board by Dec. 31, 2023. The report must evaluate, among other things, mercury concentrations in fish tissues in waterbodies around the state, whether additional reductions in mercury emissions are appropriate, and whether additional control technologies for coal-fired electrical generating units are feasible; and it must recommend future actions, if any, to be undertaken.[53]

Mercury Emissions from New Electric Generating Units

The second section of the rule, "Mercury Emissions from New Electric Generating Units,"[54] governs units that have not submitted a complete air quality permit application before Jan. 1, 2007.[55] It requires installation of "best available control technology" to control mercury emissions.[56] "Best available control technology" is to be determined on a case-by-case basis, and its definition largely tracks the definitions used in the federal Prevention of Significant Deterioration requirements for pollutants with National Ambient Air Quality Standards.[57]

Clean Air Mercury Annual Trading Program

The final section, the "Clean Air Mercury Annual Trading Program,"[58] provides for the state's participation in the federal mercury allowance-trading program. It largely incorporates by reference provisions of 40 C.F.R. Part 60 Subpart HHHH, "Emissions Guidelines and Compliance Times for Coal-Fired Electric Steam Generating Units." However, it does change the way allowances are allocated among units from the default method proposed by EPA.[59] In both cases, the determination is based on the historic heat input for a unit during a baseline period before the allocation is made, and the allocation of allowances to a unit is proportional to its baseline heat input. Several of the details, however, are different:

- The federal program provides that initial allocations will be calculated for the years 2010-2014 using heat inputs from a baseline period of 2000-2004; thereafter, allocations will be calculated annually using the same baseline heat input. The initial allocation under the Georgia rule covers only 2010-2012, using a baseline period of 2001-2005; beginning in 2013, Georgia converts to annual calculations, with the baseline period updating each year to reflect the years 5, 6, 7, 8, and 9 years before the target date.[60]
- The federal program uses the average of the three highest annual heat inputs during the baseline period to determine baseline heat input, while the Georgia program uses the highest single year during the baseline period.[61]
- Under the Georgia rule, units that permanently retire at any time during a baseline period lose their allocations for the target year of that baseline period, whereas the federal program allows retired units to keep allocations indefinitely.[62]
- The federal program sets aside 5 percent of a state's cap for new sources for the years 2010-2014, and only 3 percent thereafter; Georgia keeps the 5 percent new source set-aside indefinitely.[63]

Finally, and most significantly, the Georgia rule creates a potential to "ratchet down" the overall amount of allocations beginning in 2018.[64] Under this provision, the total allowances allocated in a given year will be the lesser of the federal budget or the amount computed by a formula based on actual emissions during the baseline period. Any difference between the federal budget for Georgia and the total allowances allocated to units will be held by EPD in a reserve account and can be reallocated to units upon a showing of need.[65] EPD considered implementing the "ratchet down" earlier but rejected that option based on an understanding that EPA would not approve it because of its administrative complexity.

The Omitted Georgia Mercury Trading Rule

As initially proposed, the Georgia CAMR included a provision, the "Georgia Mercury Trading Rule,"[66] designed to ensure that the total emissions of mercury from coal-fired electric steam generating units in Georgia would not exceed the state's allocation under the federal rule—that is, that Georgia would not import mercury credits from other

states. It did so by creating a parallel, state-only, allowance program for mercury emissions.

Under this program, EPD would allocate "Georgia Mercury Allowances" to each unit in the state; allowances would be allocated in the same manner and amount as under the Clean Air Mercury Annual Trading Program.[67] At the end of each year beginning in 2010, each unit would need to hold one Georgia Mercury Allowance for each ounce of mercury it emitted.[68] The rule provided that "[o]nly Georgia Mercury Allowances issued [by EPD] may be used to comply with the requirements of [the rule]."[69] Therefore, credits could not be imported from other states to satisfy the state-level requirement. Georgia Mercury Allowances could be "freely sold, traded, or otherwise transferred inside or outside of the State of Georgia."[70]

After the rule was proposed, however, EPA notified EPD that it would not approve any rule submitted by Georgia if both the Clean Air Mercury Annual Trading Program and the Georgia Mercury Trading Rule were adopted.[71] EPA stated that the Georgia Mercury Trading Rule would improperly restrict the federal trading program, since it would effectively prevent the purchase by Georgia utilities of allowances from other states.

Therefore, EPD had three options: (1) ignore EPA, adopt both rules, and defend its action against the inevitable challenge; (2) fully participate in the federal trading program; or (3) fully opt out of the federal trading program. Not surprisingly, EPD chose to drop the Georgia Mercury Trading Rule and fully participate in the federal trading program, as this was the only option that would ensure cooperation by the utilities.

This decision was frustrating to the environmental community because it viewed the Georgia Mercury Trading Rule as an important backstop to ensure that expected emissions reductions would in fact occur. Although, if the prescribed controls work as expected, there will be no need to import credits; the Georgia Mercury Trading Rule would have ensured this important goal.

Conclusion

Negotiation of the Georgia Clean Air Mercury Rule was a long, difficult process, but all stakeholders participated in good faith. Although there were significant disagreements on the best approach to the problem, all parties began from the premise that mercury is a serious issue in Georgia that must be addressed. Ultimately, Georgia has ended up with probably the strongest set of mercury rules in the southeast. The rules will result in greater emissions reductions, quicker, than the federal rule would have required. While they are not perfect, they do represent a substantial improvement from the deeply flawed federal rule. For this, EPD, the utilities, and the other participants in the stakeholder process are to be commended.

Endnotes

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7. Kathryn Mahaffey et al., Blood Organic Mercury and Dietary Mercury Intake: National Health and Nutrition Examination Survey, 1999 and 2000, 112 Environmental Health Perspectives 562, 565 (Apr. 2004).
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See **Mercury Endnotes** on page 11

Concentrated Animal Feeding Operations After the *Waterkeeper* Decision

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On Feb. 28, 2005, the U.S. Court of Appeals for the Second Circuit ruled on various petitions challenging the Environmental Protection Agency's (EPA's) regulation of Animal Feeding Operations (AFOs) and the subset of larger operations termed "Concentrated Animal Feeding Operations" (CAFOs).[1] At issue was a rule regulating CAFOs promulgated on Feb. 12, 2003, ("the 2003 CAFO Rule").[2] The Second Circuit upheld many aspects of this regulatory program, but rejected a key permitting presumption. EPA has attempted to revise its CAFO regulations to address this decision and, on June 30, 2006, issued for notice and comment proposed changes to 40 C.F.R. Parts 122 and 412 (the "proposed new rule").[3]

The proposed new rule received significant comment, and EPA has delayed notice of a final rule for many months. One of the remaining bones of contention (CAFOs present a barnyard of opportunities for word play) is how to address the Second Circuit decision with regard to incorporating Nutrient Management Plans (NMPs) within the terms of a CAFO permit.

This article highlights the issues presented in the proposed new rule and addresses the broader implications of these proposed changes to CAFO regulation under the Clean Water Act (CWA). In addition to federal changes, delegated states will have to look at how they want to adjust their CAFO regulations in light of this proposed new rule and decision of the Second Circuit. Resolution of these issues will have significant impacts in EPA Region 4. The southeast is home to the largest livestock production states for poultry, and likely possess some of the largest hog operations in the country. Georgia is both the largest poultry producing state in the U.S. and the fourth fastest growing state in the Union. These two statistics present a certain conflict in parts of Georgia where agricultural land use conflicts with urbanization, and where storm water runoff from newly urbanized areas mixes with agricultural non-point source pollution upstream of large drinking water and recreational impoundments such as Lake Lanier and Lake Allatoona. Florida's dairy industry and South Carolina's poultry industry face similar challenges.

Background on the Environmental Impact of Animal Farms[4]

AFOs are targeted by regulators primarily because of the amount of animal manure and wastewater they generate and the associated potential for negative impacts on water quality. According to EPA, because excess manure is often placed in large storage lagoons, manure stockpiles, or placed directly on the farmland, animal operations, including feedlots and animal holding areas, affect 20 percent of "impaired river miles," or about 35,000 river miles in 22 states.[5] Environmental groups point out that AFOs may also contaminate groundwater, cause surface water pollution, and cause nasty odors with possible adverse health effects.[6] The primary pollutants of concern from AFOs are largely nutrients (i.e., nitrogen and phosphorous), sediment, pathogens (i.e., bacteria and viruses), heavy metals from additives to livestock feed, antibiotics, and ammonia. Excess nutrients can contribute to eutrophication, anoxia, and, when combined with other circumstances, may even be associated with outbreaks of pfiesteria piscicida, a dinoflagella thought to be associated with blooms. According to the United States Senate Committee on Agriculture, Nutrition, and Forestry, the magnitude of these potentially wicked environmental impacts is staggering because AFOs produce 130 times more waste than the waste generated by humans in this country.[7]

Although the exact relationship remains unclear, the environmental concerns associated with AFOs may actually increase as the number of farms decrease. The General Accounting Office estimates that, between 1987 and 1992, the number of AFOs decreased nationwide, indicating a consolidation within the industry overall and greater production from fewer, larger AFOs.[8] For instance, the number of hog farms has fallen from approximately 300,000 to approximately 157,000 over the past 15 years, while the number of hogs produced has remained about the same.

The overall evidence on the negative environmental effects of an increasing number of AFOs, however, is far from conclusive. A U.S. Geological Survey (USGS) of the Apalachicola-Chatahoochee-Flint (ACF) River Basin, which includes metropolitan Atlanta and drains approximately 20,000 square miles in Georgia, Florida and

Alabama, cites AFOs as a possible cause of water degradation.[9] The study lists sources of nitrogen and phosphorous to include: animal manure, primarily chicken litter; fertilizer; runoff from agriculture, urban, and suburban areas; septic systems; atmospheric deposition; and decomposition of organic matter. The study also states that high nutrient and suspended-sediment yields from storm flows are indicative of primarily non-point sources of these constituents, such as runoff from poultry production, urban areas, and suburban areas. Unfortunately, the USGS study provides no direct empirical data to support its conclusion that AFOs degrade the ACF river basin.

Actual studies conducted in the ACF river basin provide a different picture of the environmental impact of AFOs. In a study of wells serving poultry houses conducted by the University of Georgia's Cooperative Extension Service, only 13 of 509 wells examined exceeded the EPA limit of 10 parts per million (ppm) of nitrate nitrogen.[10] Based on site inspection visits by Extension Service scientists, 12 of these 13 wells were determined to have improper or inadequate well head protection that allowed surface water to contaminate the well directly. The Extension Service also completed studies in 1994 and 1996 that showed that 551 poultry wells contained an average nitrate nitrogen level of 3.67 ppm.[11] Compared with this result, wells on swine farms averaged 4.54 ppm, and those from dairy farms averaged 3.85 ppm. All of these levels were only slightly higher than for those obtained from random sampling of domestic household wells in the area.

A similar conclusion was reached in North Carolina. In 1996 and 1997, nitrate levels at every North Carolina company or contract farm well located closest to each facility's storage lagoon were tested for the presence of nitrates.[12] According to this study, more than 99 percent of the wells tested had levels below the state standard of 10 ppm nitrate nitrogen for drinking water, and most of the tests showed nitrate nitrogen levels as non-detect. In a well publicized 1996 study, North Carolina's Department of Water Quality (DWQ) determined that 89 wells across the state had nitrate nitrogen concentrations in excess of 10 ppm (or 9.4 percent). When this data was linked to the pork production industry in media reports, the North Carolina Pork Council hired an environmental engineering firm to review DWQ's study. The environmental engineers concluded that the majority of the wells were improperly constructed and that synthetic fertilizer, septic systems, and naturally occurring soil organic nitrogen were the primary sources of the nitrate nitrogen in the wells. Nonetheless, the regulation of AFOs continues to evolve.

The 2003 CAFO Rule

The CWA regulates some AFOs as a "point source," subject to the National Pollutant Discharge Elimination System (NPDES).[13] At first glance, AFOs appear to be non-point sources; water runs over land or through the ground, picks up pollutants, and deposits them in surface waters or introduces them into groundwater. The CWA, however, only recognizes some AFOs within the definition of "point source." Section 502(14) of the CWA states, "[t]he term 'point source' means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel. . . *concentrated animal feeding operation* . . . from which pollutants are or may be discharged."[14]

Under former regulations and under the 2003 CAFO Rule, a feedlot is an AFO if it stables or confines and feeds or maintains animals for a total of 45 days or more in any 12-month period, and does not sustain crops, vegetation, forage growth, or post harvest residues during the normal growing season over any portion of the lot or facility.[15] A CAFO is the largest category of AFO. Under the CWA regulations, a CAFO is an AFO which contains more than a specified number of animals or which contains 1,000 or more "animal units."[16] The regulations provide conversion factors for specific categories of animals in order to calculate this unit of measurement. An AFO with fewer than the specified number of animals is considered a CAFO if it has discharged into navigable waters through an artificial ditch, flushing system or other artificial device *or* has discharged pollutants directly into the waters of the United States which originate outside of and pass over, across, or through the facility or otherwise come into direct contact with the animals at the operation.[17]

The 2003 CAFO Rule required owners or operators of all CAFOs to seek coverage under an NPDES permit. This "duty to apply" in the 2003 CAFO Rule was the focus of industry's concern. The 2003 CAFO Rule continued a requirement that NMPs be prepared by CAFOs and maintained on the farm to address the application of manure or litter at agronomic rates appropriate for the specific soils and crops at the site. Environmental groups were concerned that leaving NMPs out of the permit review and issuance process would violate the CWA. Both groups challenged the 2003 CAFO Rule in the Second Circuit Court of Appeals.

The Second Circuit Decision

As mentioned above, the Second Circuit had before it various petitions challenging the 2003 CAFO Rule, which was promulgated under the CWA. The court vacated those provisions of 40 C.F.R. § 122.23 that allowed permitting authorities to issue permits without reviewing the terms of the NMPs, that allowed agencies to issue permits that did not include the terms of the NMPs, and that required CAFOs to apply for an NPDES permit regardless of whether they had actual discharges. The court also remanded portions of the rule to EPA to establish a proper New Source Performance Standard (NSPS) for pathogen

reduction and to clarify the basis for failing to promulgate water quality effluent limitations for discharges other than agricultural storm water discharges.

Two key issues decided by the Second Circuit relate to the role of NMPs and the duty to apply for a permit. As to the NMPs, the court questioned the appropriate level of agency review and public participation regarding the NMPs. The court relied on a decision of the Ninth Circuit, that held an individualized set of best management practices must be submitted to the permitting authority for review under Phase II of the rule for municipal separate storm sewers.[18] By analogy, NMPs for CAFOs should also be submitted because these plans constitute effluent limitation guidelines.[19] The court went on to compel the opportunity for public participation and to require that such plans be incorporated into the terms of any issued permits.[20]

On the question of how the 2003 CAFO Rule treated the potential to discharge, the court rejected that rule's presumption that CAFOs are likely to discharge pollutants other than exempt agricultural storm water runoff, so that such operations must either apply for coverage under an NPDES permit or prove to the permit issuing authority that no discharge is possible. According to the Second Circuit, the 2003 CAFO Rule violates the statutory scheme of the CWA by imposing obligations on all CAFOs regardless of whether they have, in fact, discharged any pollutants as defined in the statute.[21] Even though the term "point source" appears to contemplate the potential to discharge, only actual discharges are subject to effluent limitations under CWA § 301(e), 33 U.S.C. § 1311(e).

Related to the "duty to apply" discussion by the court is the court's affirmation of the "agricultural storm water" exclusion found in the definition of a "point source." That exclusion provides, "'Point source' means any discernible, confined, and discrete conveyance, including but not limited to any…concentrated animal feeding operation, from which pollutants are or may be discharged. *This term does not include agricultural storm water discharges*…."[22] The court found that if the discharge from the CAFO was the result of precipitation, instead of over-application of manure, then the 2003 CAFO Rule, and EPA's application of it, was proper. Under the 2003 CAFO Rule, the exception was met so long as the discharge was "precipitation-related" and "manure, litter or process wastewater has [otherwise] been applied in accordance with site specific nutrient management practices that ensure appropriate agricultural utilization."[23] Environmental Petitioners had argued that this exemption should not have any application in the context of CAFOs because CAFOs were expressly mentioned within the point source definition.

The court remanded a number of other issues for EPA to consider, including the need for a water quality-based effulent limitation for discharges other than agricultural storm water discharges, the need to better support NSPS in the 2003 CAFO Rule, and the need for affirmative findings that the best conventional technology guidelines for conventional pollutants such as fecal coliform were appropriate.

The Proposed New Rule

On June 30, 2006, EPA proposed its response to the Second Circuit's decision and remand.[24] This proposal only addressed changes necessary to address the Second Circuit's decision.[25] To address the decision on "duty to apply," the proposed new rule does not impose a blanket requirement that all CAFOs must apply, and it eliminates the procedures for a "no potential to discharge" determination. However, any CAFO that "discharge[s] or propose[s] to discharge" must seek coverage under an NPDES permit.[26] There is no de minimis threshold or exception for bypass or upset under this change. EPA clearly believes and argues in its proposal that most CAFOs should apply for coverage under an NPDES permit. The industry, on the other hand, appears to believe that such an application is not needed or necessary in most cases because the only discharge that is likely to occur is covered under the agricultural storm water exemption. The proposal also seeks to clarify how CAFOs fall under the agricultural storm water exemption when they land apply manure, litter, or process wastewater.

Under the 2003 CAFO Rule, EPA had restricted the exemption for agricultural storm water by limiting it to only those CAFOs that include at their site certain protective measures such as edge-of-field buffers, testing of manure and soil, land application at agronomic rates, and record keeping.[27] The proposed new rule also ties this exemption to operation of the CAFO in accordance with an NMP that meets the technical nutrient management practices of 40 C.F.R. § 122.42(e)(1)(vi)-(ix). For "large CAFOs," this should include those extra measures established by EPA at 40 C.F.R. 412.4(c). For CAFOs that do not seek coverage under an NPDES individual or general permit, the proposed new rule argues that they must maintain on site written evidence of compliance with these technical standards and an NMP or face potential exposure to liability for not meeting the terms of the agricultural storm water exception.[28]

Because the Second Circuit did not remand or vacate the technical terms of an NMP, the proposed new rule does not alter the substance of what has been required for such plans, including the best management practices and best professional judgment required in developing such plans. However, the mechanics for how these plans are reviewed and incorporated into the permit is slated for dramatic change. The proposed new rule proposes to require that all applicants for either an individual or general NPDES CAFO permit submit, as part of either an application or Notice of Intent (NOI), a copy of the NMP for that site.[29]

The proposed new rule also dictates that agencies review these NMPs and make them available for public review and comment, to include the opportunity for public participation. Again, this review and opportunity for public participation is required for both individual and general permit coverage.

Comments submitted by industrial trade associations point out the potential deluge of NMPs to be submitted for review by permit issuing authorities. For example, in Georgia if one-half of the poultry growers potentially covered as CAFOs decide to secure a CAFO permit, the Georgia Environmental Protection Division would need to process an additional 1,500 to 2,000 NMPs and related permits. That would double the number of NPDES permits issued in Georgia.[30]

One key challenge for the proposed new rule is how to honor the decision of the Second Circuit in the context of general permitting. There is no existing provision to address how to incorporate a site-specific requirement into a general permit, much less afford opportunity for public participation in the site-specific documentation. The new procedure proposed by EPA in this rule would allow the incorporation of the site-specific NMPs into the CAFO general permits and provide an opportunity for public review of a CAFO's NOI (including the entire NMP) before the CAFO is granted coverage under the general permit. This public participation includes neighboring states that may be impacted. The proposal seeks input on how to implement such a procedure without undermining the efficiency and practicality of a general permit. The proposed new rule suggests fixed timeframes as one tool, which would be provided as part of advance notice to interested parties in proposing or revising the general permit. Also, EPA proposes to use web sites or other electronic means to attempt to publicize and share the details of the NOIs and their accompanying NMPs. Further, these NMPs will be incorporated as terms of the permit and will be enforceable under the proposed new rule.[31]

The proposed new rule seeks to shore up EPA's position on the remanded items regarding NSPS and Best Control Technology (BCT) requirements under the CWA. As to NSPS, EPA has eliminated the presumptive no discharge safe harbor available to new CAFOs through use of a 100-year, 24-hour rain event containment structure. In lieu of this presumption, EPA would authorize the NPDES Program Directors to establish no discharge best management practice effluent limitations based upon a site-specific evaluation for an individual CAFO.[32] As to BCT, EPA found that its current regulations and performance standards under the 2003 rule meet BCT.[33]

Conclusion

Whether CAFOs are viewed as family farms or animal factories, the proposed new rule and Second Circuit decision have the potential to fundamentally change how animal production in the U.S. is viewed and regulated. If you side with the view that these are independent family farms, then how will such an entity shoulder the expense and responsibility of running the NPDES gauntlet with notice, comment and CWA fines attached to a NMP? If you side with the view that these are factory farms controlled by big business, then where will big business go with its money to avoid exposure under these rules? Moreover, in light of these new pressures, who will be tempted to consider themselves exempt in light of the Second Circuit ruling and not be required to seek NPDES coverage? EPA's delay in finalizing these new rules is understandable. The proposed new rule represents a real challenge to the general permitting scheme used in many other non-point source programs, such as industrial and construction storm water permitting. Also, as direct discharge permits become harder to come by because of impaired streams and limited waste load allocations, how will these rules impact land application systems and their presumed "no discharge" operation outside the NPDES framework in some states? There are no easy answers, but all sides to this debate will hopefully listen for common ground to make environmental progress that comports with a secure national food supply.

Endnotes

1. Waterkeeper Alliance, Inc. v. EPA, 399 F.3d 486 (2nd Cir. 2005).
2. 68 Fed. Reg. 7176.
3. 71 Fed. Reg. 37,744.
4. This section appeared in, Gregory W. Blount, The New Nonpoint Source Battleground: Concentrated Animal Feeding Operations, Natural Resources and Environment, Volume 14, Number 1 (Summer 1999).
5. Subcomm. on Livestock, Dairy and Poultry jointly with Subcomm. on Forestry, Resource Conservation, and Research, H. Comm. on Agriculture, 105th Cong. 61, 64 & 68 (May 13, 1998) (prepared statement of Michael Cook, Director, Office of Wastewater Management, U.S. EPA).
6. Michelle Nowlin, Point-Counterpoint . . . 52 J. Soil & Water Conservation 314 (Sept. - Oct. 1997); see generally Kenneth Steel, Ed., Animal Waste and the Land-Water Interface (1995).
7. Minority Staff of the U.S. S. Comm. on Agriculture, Nutrition, and Forestry, Animal Waste Pollution in America: An Emerging National Problem 3 (Dec. 1997).
8. U.S. Gen. Accounting Office, Animal Agriculture: Information on Waste Management and Water Quality Issues (1995).
9. U.S. Geological Survey, Water-Resources Investigations Report 96-4101, Nutrient Sources and Analysis of Water Quality Date, Apalachicola-Flint River Basin (1998).
10. Bill Segars, University of Georgia Cooperative Extension Service Study (1997).
11. Bill Segars, University of Georgia Cooperative Extension Service Study (1994 & 1996).
12. Garth W. Boyd, Point—Counter Point, 52 J. Soil & Water Conservation 314 (Sept.-Oct. 1997).
13. 40 C.F.R. § 122.23(a).
14. 33 U.S.C. § 1362(14).

15. 40 C.F.R. § 122.23(b).
16. 40 C.F.R. § 122(b)(4).
17. 40 C.F.R. § 122(c)(3).
18. Environmental Defense Center, Inc. v. EPA, 344 F.3d 832 (9th Cir. 2003),
19. Waterkeeper, 399 F.3d at 499.
20. *Id.* at 502-04.
21. *Id.* at 504-06.
22. 33 U.S.C. § 1362(14) (emphasis added).
23. 40 C.F.R. § 122.23(e).
24. 71 Fed. Reg. 37,744.
25. The proposed new rule maintained the compliance dates of the 2003 CAFO Rule. In light of rulemaking delays, however, EPA recently extended both the date by which certain operations must apply to be covered as CAFOs and the date by which already permitted CAFOs are required to develop and implement NMPs. 72 Fed. Reg. 40,245 (July 24, 2007). EPA extended the compliance dates from July 31, 2007, to February 27, 2009. *Id.*
26. 71 Fed. Reg. 37,748.
27. 40 C.F.R. § 122.42(e)(1)(vi)-(ix).
28. 71 Fed. Reg. 37,750.
29. 71 Fed. Reg. 37,751.
30. *See* Joint Comment from National Chicken Council, U.S. Poultry & Egg, and National Turkey Federation at 12, Docket No. EPA-HQ-OW-2005-0037, Document No. 0662 (Aug. 29, 2006).
31. 71 Fed. Reg. 37,754
32. 71 Fed. Reg. 37,760.
33. 71 Fed. Reg. 37,764.

Environmental Law Section Officers

Mercury Endnotes

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2006, available at http://www.boston.com/news/local/massachusetts/articles/2006/04/03/mercury_down_32_in_fish_near_mass_incinerators/.

20. Clean Air Act § 112(b)(1), 42 U.S.C. § 7412(b)(1).
21. Clean Air Act § 112(d)(3), 42 U.S.C. § 7412(d)(3).
22. *See* State and Territorial Air Pollution Program Administrators (STAPPA)/Association of Local Air Pollution Control Officials (ALAPCO), Regulating Mercury from Power Plants: A Model Rule for States and Localities, 6 (Nov. 2005); 65 Fed. Reg. 79,825, 79,827 (Dec. 20, 2000).
23. Regulatory Finding on the Emissions of Hazardous Air Pollutants from Electric Utility Steam Generating Units, 65 Fed. Reg. 79,825, 79,830 (Dec. 20, 2000). Clean Air Act Section 112(n)(1)(A) requires EPA to conduct a study of the public health hazards resulting from emissions of HAPs from electric utility steam generating units and to regulate these units under section 112 "if the Administrator finds such regulation is appropriate and necessary after considering the results of the study." 42 U.S.C. § 7412(n)(1)(A).
24. 70 Fed. Reg. 15,994 (Mar. 29, 2005).
25. 70 Fed. Reg. 28,606 (May 18, 2005).
26. New Jersey, et. al v. EPA, Docket No. 05-1097 (D.C. Cir. filed Mar. 29, 2005) and consolidated cases.
27. 70 Fed. Reg. at 28,606.
28. *Id*. at 28,619.
29. *Id.* at 28,649; 40 C.F.R. § 60.24(h)(3).
30. *See* spreadsheet at http://www.georgiaair.org/airpermit/cair/downloads/CAMR_affected_unit_info.pdf. These figures are based on heat input, not actual emissions, and may therefore be inaccurate, but they are the only data available.
31. See 40 C.F.R. Part 60, Subpart HHHH.
32. 40 C.F.R. § 60.4101.
33. 40 C.F.R. § 60.24(h)(1).
34. *See* http://www.georgiaair.org/airpermit/cair/102005meeting.html.
35. Available at http://www.georgiaair.org/airpermit/cair/downloads/camr_predraft_rule022006.pdf (hereinafter, "February 2006 Proposal").
36. February 2006 Proposal at 2-3. Based on 2004 TRI data, and assuming no changes in production levels, emissions would be 955 pounds, or 0.478 tons, at 80 percent efficiency and 478 pounds, or 0.239 tons, at 90 percent efficiency. (Calculations prepared by and on file with author.)
37. February 2006 Proposal at 5-6.
38. *See* Georgia Mercury Rule – Preliminary Position, 3 of 6 (Sept. 5, 2006), available at http://www.georgiaair.org/airpermit/cair/downloads/September%205%20CAMR%20Preliminary%20Position%20Paper.pdf.
39. Ga. Comp. R. & Reg. r. 391-3-1-.02(2)(sss)18.
40. Proposed Rule dated December 21, 2006, available at http://www.georgiaepd.org/environet/1/camr_amendment_20061221.pdf (hereinafter, "December 2006 Proposed Rule").
41. Proposed Rule dated April 13, 2007, available at http://www.gaepd.org/environet/1/20070413_Amendments_CAMR.pdf.
42. Ga. Comp. R. & Reg. r. 391-3-1-.02(2)(sss).
43. Ga. Comp. R. & Reg. r. 391-3-1-.02(2)(sss)1-11.
44. SCRs and scrubbers do not affect mercury emissions from subbituminous coal; they have been included in the rule because they are necessary under other legal requirements and fit within the multi-pollutant control strategy of Ga. Comp. R. & Reg. r. 391-3-1-.02(2)(sss).
45. Ga. Comp. R. & Reg. r. 391-3-1-.02(2)(sss)14.
46. Ga. Comp. R. & Reg. r. 391-3-1-.02(2)(sss)15.
47. Ga. Comp. R. & Reg. r. 391-3-1-.02(2)(sss)13, 16; Procedures for Testing and Monitoring Sources of Air Pollutants § 2.124.
48. Ga. Comp. R. & Reg. r. 391-3-1-.02(2)(sss)6, 7, 8, 10.
49. Georgia Environmental Protection Division, Multipollutant Control for Electric Utility Steam Generating Units 391-3-1-.02(2)(sss): Overview of Proposed Rule, slide 2 (Jan. 17, 2007), available at http://www.georgiaair.org/airpermit/cair/01172007meeting.html (follow "Draft Georgia Rule (sss)" hyperlink).
50. *Id.*, slides 7, 10.
51. Calculations prepared by and on file with author.
52. Ga. Comp. R. & Reg. r. 391-3-1-.02(2)(sss)12.
53. Ga. Comp. R. & Reg. r. 391-3-1-.02(2)(sss)18.
54. Ga. Comp. R. & Reg. r. 391-3-1-.02(2)(ttt).
55. Ga. Comp. R. & Reg. r. 391-3-1-.02(2)(ttt)(2).
56. Ga. Comp. R. & Reg. r. 391-3-1-.02(2)(ttt)1.
57. Ga. Comp. R. & Reg. r. 391-3-1-.02(2)(ttt)(3)(v); 42 U.S.C. § 7479(3); 40 C.F.R. §§ 51.166(b)(12), 52.21(b)(12).
58. Ga. Comp. R. & Reg. r. 391-3-1-.02(14).
59. *Id.* The federal CAMR explicitly authorizes states to change allocation methods and provides that doing so will not affect approval. 40 C.F.R. § 60.24(h)(6).
60. Compare Ga. Comp. R. & Reg. r. 391-3-1-.02(14)(v), (w)1-3, with 40 C.F.R. §§ 60.4141, 60.4142(a).
61. Compare Ga. Comp. R. & Reg. r. 391-3-1-.02(14)(w)1(i), with 40 C.F.R. § 60.4141(a)(1)(i).
62. Compare Ga. Comp. R. & Reg. r. 391-3-1-.02(14)(f), with 40 C.F.R. § 60.4105(b)(2).
63. Compare Ga. Comp. R. & Reg. r. 391-3-1-.02(14)(w)4, with 40 C.F.R. § 60.4142(b)(1), (c)(1).
64. Ga. Comp. R. & Reg. r. 391-3-1-.02(14)(w)2.
65. Ga. Comp. R. & Reg. r. 391-3-1-.02(14)(w)3(iv).
66. December 2006 Proposed Rule at 391-3-1-.02(15).
67. *Id.* at 391-3-1-.02(15)(n).
68. *Id.* at 391-3-1-.02(15)(p).
69. *Id.* at 391-3-1-.02(15)(r).
70. *Id.* at 391-3-1-.02(15)(s).
71. Available at http://www.georgiaair.org/airpermit/cair/01302007meeting.html (follow "EPA part 2" hyperlink).

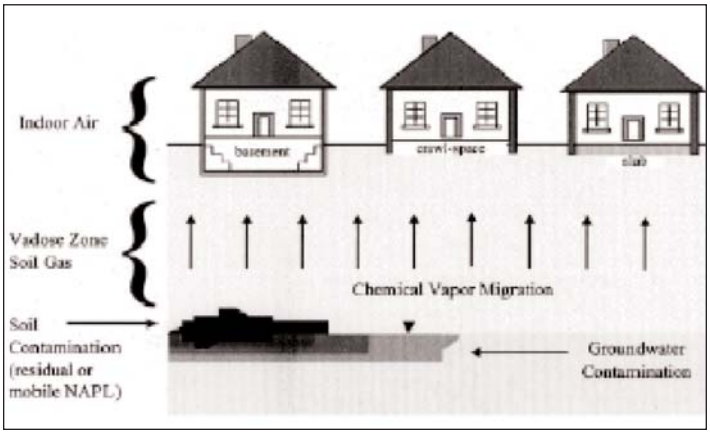
Vapor Intrusion—What Is It and Should a Vapor Intrusion Risk Be a Recognized Environmental Condition?

By John C. Allen and Edward A. "Skip" Kazmarek

Vapor intrusion begins when some type of environmental contamination has been left underground on a piece of property. Vapors from the contamination can then be transported from subsurface soils or groundwater and into buildings through the natural exchange of air or mechanical ventilation systems.[1] The concept of vapor intrusion has been around for a long time. However, a series of lawsuits and an increased emphasis by several state environmental agencies are starting to bring vapor intrusion to the forefront as an important consideration both for parties charged with the remediation of contaminated properties and for prospective purchasers of a site on or near a former contaminated site. This article will primarily focus on the latter group and will specifically look at whether the possible presence of a vapor intrusion risk is now considered or should be considered a Recognized Environmental Condition (REC) when conducting a Phase I Environmental Site Assessment (Phase I).

What is Vapor Intrusion and Why is it an Issue?

Vapor intrusion can come from contamination that is in the soil, that is dissolved in groundwater, or that exists as a separate phase with the groundwater known as a non-aqueous phase liquid (NAPL), such as gasoline floating on top of the water table.[2] Chlorinated solvents are another common source of vapor intrusion concerns. As a result of contamination, volatile organic compounds (VOCs) can volatilize from the soil or groundwater into pore spaces between soil particles and, in the form of soil gas, move up through the soil to the surface.[3] When this upward movement of vapor occurs beneath a building, the vapors can enter the indoor air space of the building through utility openings or cracks in the building's walls or foundation, resulting in the accumulation of low levels of volatilized chemicals in the building's indoor air.[4] A visual representation of vapor intrusion is shown in the figure above.



Buildings where there is porous fill material or soil beneath the building, high concentrations of contamination, and either shallow contaminated groundwater or contaminated soil just below the building foundation or slab will generally be more prone to vapor intrusion.[5] Factors influencing the movement of vapors through the soil can be very complex and will depend on variables such as: type of contaminant, concentration of the contaminant, depth and location of the contamination, nature of the soil, the exposure pathway, and the design of the building.[6]

The environmental community has been aware of the concept of vapor intrusion for quite a while and is nothing new for regulators or for those experienced with site cleanups. Radon infiltration, for example, has been an identified concern in residential buildings since at least the early 1980s. Infiltration from underground storage tanks, even to the extent of creating potentially explosive conditions, has also been a known concern for quite some time. However, regulatory and public scrutiny of vapor intrusion issues has become more intense in the past five years.

The current regulatory focus on vapor intrusion issues began, in part, as a result of a vapor intrusion concern near a state department of transportation facility in Denver, Co., (commonly referred to as the Redfield Rifle Scopes Site). Indoor air testing of selected structures around the site began in 1998, leading to the discovery of significant levels of chlorinated solvents in the form of trichloroethylene (TCE) and dichloroethylene (DCE) in nearby homes. As of November 2004, 728 homes had been tested with more than 54 percent containing levels of DCE above the state action levels. These levels existed despite the fact that models used by the U.S. Environmental Protection Agency (EPA) predicted little or no contamination.[7] A jury eventually awarded impacted homeowners approximately $1 million for damages related to the contamination.

The scrutiny of vapor intrusion intensified even more because incidents such as those at the Redfield Rifle Scope Site have coincided with three other current environmental trends: risk-based cleanup criteria; the development of mathematical models to calculate potential indoor air concentrations; and "brownfield" reuse and redevelopment

activities that were putting structures on top of sites where some level of contamination had been allowed to remain in place.[8] As more and more developments are going up on former brownfield sites, regulatory agencies are beginning to focus on the risk posed by vapor intrusion issues and the extent to which vapor intrusion risks should be addressed during the cleanup process. Also, federal and state agencies are beginning to reconsider the effectiveness of models that have been used in the past for calculating the potential vapor intrusion risks.

There has been some disagreement as to who has the responsibility for the regulation of vapor intrusion. The federal Occupational Safety and Health Administration (OSHA) has traditionally managed indoor air issues by promulgating regulations that comprehensively govern worker exposure to toxic chemicals in the workplace, including Permissible Exposure Limits (PELSs) designed to keep workers safe. For years, EPA had maintained that it lacked the authority to regulate indoor air quality. However, EPA has recently intensified its interest in vapor intrusion and appears to be extending the scope of its regulation indoors. In November 2002, EPA issued a technical guidance document titled "Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils." This document outlined a three-tiered approach for determining whether humans are exposed indoors to chemical vapors originating from underground contamination.

Many states are also issuing their own regulations, policies, and guidance documents. To this point, 16 states have prepared written guidance documents: California, Colorado, Connecticut, Idaho, Indiana, Louisiana, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Oregon, Pennsylvania, South Carolina and Wisconsin. Essentially all states now require that vapor intrusion risks be addressed as part of remediation at a contaminated site. The Georgia Environmental Protection Division has begun requiring that some owners of contaminated property employ the Johnson-Ettinger model discussed below to determine whether a vapor intrusion risk exists, particularly for sites at which the source of the contamination is dry cleaning solvents.

Some states are even taking a second look at how they have handled vapor intrusion issues in the past. In a policy statement issued in October 2006, the New York State Department of Environmental Conservation (NYDEC) announced that, based on new information gained from site investigations, New York is currently re-evaluating previous assumptions and decisions regarding the potential for soil vapor intrusion at sites. As a result, all past, current and future contaminated sites will be evaluated to determine whether these sites have the potential for exposures related to soil vapor intrusion. NYDEC intends to re-examine 430 sites with VOC contamination remediated before 2004. NYDEC is also evaluating soil vapor intrusion at all sites currently in the pre-remedial decision phase and will evaluate soil vapor intrusion at all future sites during the remedial investigation phase.

Current Treatment of Vapor Intrusion in a Phase I Environmental Assessment

It is clear from the discussion above that vapor intrusion will be of increasing concern for parties responsible for the remediation of contaminated sites. What may not be so clear to some is the impact that vapor intrusion will have on prospective purchasers of property that has already been cleaned up or that is near formerly contaminated property.

Congress provided for liability protection for purchasers of potentially contaminated property under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as long as those prospective purchasers were not themselves responsible for the contamination and can also meet other specified requirements. One step that must be taken to avoid potential CERCLA liability is conducting what is known as All Appropriate Inquiries concerning the property prior to purchase.[9] EPA issued rules outlining the All Appropriate Inquiry requirements in November 2005.[10]

The American Society for Testing and Materials (ASTM) developed standards for making the initial assessment of the environmental condition of a piece of property prior to purchase (known as a Phase I assessment).[11] Although initially designed to define the CERCLA criteria discussed above, the ASTM Phase I standard has been adopted worldwide as a useful environmental assessment tool. The ASTM Phase I standard was last modified in 2005 to incorporate the requirements of EPA's All Appropriate Inquiry Rule.[12] EPA's rule specifically states that conducting an environmental assessment using the ASTM 1527-05 standard will allow a prospective purchaser to meet certain portions of the All Appropriate Inquiry requirements.[13]

The purpose of the ASTM Phase I standard is to "define good commercial and customary practice in the United States of America for conducting an environmental site assessment of a parcel of commercial real estate with respect to the range of contaminants within the scope of [CERCLA] and petroleum product."[14] The standard goes on to state that, "the goal of the processes established by the practice is to identify recognized environmental conditions [RECs]," which the standard defines as "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of hazardous substances or petroleum products into structures on the property or into the ground, ground water or surface water of the property."[15]

Despite this definition, there is still confusion as to whether vapor intrusion is or should already be a consideration in a Phase I assessment. The use of the phrase "into structures on the property" would appear to clearly indicate that vapor intrusion is already included in the standard. However, others point out that section 13 of the standard specifically lists "isndoor air quality" as a non-scope consideration.[16]

You may ask why it really matters whether vapor intrusion is already included in the current ASTM Phase I standard. The answer to that question will not change the fact that, if a vapor intrusion issue is found, it will be the property owner that will ultimately have to deal with any vapor intrusion problem. However, there could be some question as to how that liability is shared, such as when a vapor intrusion issue is discovered on a site that has already undergone a Phase I assessment and may have already undergone some degree of remediation. The current property owner may claim to have relied on a Phase I assessment to conclude that that there were minimal environmental risks associated with the site, only to later discover a vapor intrusion problem. As mentioned above, the State of New York is already going back and reopening sites that were long thought to be safe for residential uses. Should the environmental consultant conducting the Phase I assessment have provided more warning of a potential vapor intrusion problem?

Without clear guidance, environmental consultants performing Phase I assessments are finding themselves in a very difficult situation. Their clients are asking that, by performing a Phase I, the environmental consultant identify all of the possible environmental risks associated with that property. Because vapor intrusion can affect the value of a piece of property, lenders are beginning to insist that vapor intrusion issues be considered. Also, some environmental database companies are beginning to develop databases that specifically address vapor intrusion. With these databases now available, it will be difficult for environmental consultants to exclude mention of vapor intrusion in their reports. Some clients already ask consultants to evaluate whether VOC or petroleum RECs that they have identified as part of a Phase I assessment poses a vapor intrusion risk. However, while a Phase I report can note the possibility of a vapor intrusion issue, the actual presence of vapor intrusion into a building can only be established by some level of testing, which is definitely outside of the scope of a Phase I assessment.

In addition, there are also concerns related to insurance. Some insurance companies have written policies to protect the environmental consultant that performed the initial Phase I assessments. These insurance companies may have also written policies that insure against the reopening of a site. If vapor intrusion is a part of the current ASTM standard, and the environmental consultant did not adequately investigate the possibility of a vapor intrusion issue at the site, the environmental consultant could be held liable if the site is later reopened or if, as in Colorado, there are personal injury claims related to vapor intrusion. The result of these various pressures on environmental consultants may make consultants quick to reach the conclusion that a vapor intrusion issue exists.

ASTM has established a task group that may clear up this issue and alleviate some of the confusion. The task group is charged with developing a standard for the evaluation of vapor intrusion risks. Work began on the new ASTM standard in early 2006. Part of the task group's responsibility is to determine whether vapor intrusion evaluation should be considered a standard requirement under a Phase I assessment or whether such an evaluation should be specifically identified as a non-scope requirement. The new standard is currently in the voting and comment stage of the standard development process. The release date for the standard will depend on the number and scope of comments received.

However, no matter the outcome of the ASTM work group, attorneys for potential property owners should keep in mind that, as mentioned above, the ultimate responsibility for dealing with a vapor intrusion problem will likely fall on the property owner. Vapor intrusion is not a new phenomenon and potential property owners should remain aware of the associated risks. Users of Phase I assessments should pay very close attention to conditions identified in the Phase I that could lead to future vapor intrusion issues, regardless of whether a consultant identifies the condition as a REC or addresses vapor intrusion at all.

Dealing With the Potential of Vapor Intrusion After a Risk is Identified

Once an environmental consultant or a potential property owner identifies a possible vapor intrusion risk, the question becomes, what next? Unfortunately, identifying the potential for vapor intrusion is only the beginning. There are several technical problems that can arise when the property owner is faced with the task of trying to actually quantify the vapor intrusion concern. There are several methods that a property owner might choose in order to try to quantify the actual risk associated with vapor intrusion and each method has its drawbacks. This is another point of confusion that ASTM hopes to address in the upcoming vapor intrusion standard by developing a recognized standard for vapor intrusion that establishes which evaluation methods should be employed under a given set of circumstances.

Much of the confusion may have started with EPA's issuance of its draft guidance in 2002. Some states believed that the EPA's draft guidance (which is being revised) is far too stringent.[17] As a result, states are coming

up with their own standards, further increasing the confusion as to which methods to use.

The first method for quantifying the vapor intrusion risk is to apply one of a variety of models. The Johnson-Ettinger model is the most commonly used model to estimate indoor air concentrations resulting from vapor intrusion and is also the model recommended by EPA. Although some critics would disagree, the majority of environmental professionals that have used the Johnson-Ettinger Model contend that the model is likely to over predict related indoor air concentrations.[18] This over prediction is likely the result of the model's use of a wide range of conservative default assumptions in the place of site-specific data.[19] Such over prediction could cause a potential property owner to undertake efforts to remediate the source of the vapor intrusion when such measures may not be necessary in that particular situation. The potential property owner may even decide to pass on the purchase altogether. Although not widely validated, another concern with the Johnson-Ettinger model is that the predicted indoor air concentrations may be high for VOCs and low for chlorinated compounds such as was the case at the Redfield Rifle Scopes Site in Colorado.[20]

An alternative to using models is to establish screening values for groundwater or soil gas below which it is assumed that vapor intrusion will not be an issue or by developing "attenuation factors" that are the presumed reduction in concentration between the medium and the indoor air.[21] Contaminant levels from groundwater or soil gas samples can then be compared to these screening values or attenuation factors. The problem with either of these approaches is that both employ highly conservative assumptions, once again creating the likelihood of over-predicting the extent of the vapor intrusion.

The final alternative is to take samples of the actual indoor air at affected sites. However, such a process may be even more fraught with risks than using models or screening values. One potential drawback is that the applicable indoor air action levels for chlorinated solvents involve very low levels that push the limits of most laboratory equipment, leading to the possibility that a real vapor intrusion risk is not property identified.[22] Another problem within indoor air sampling is that many household products can contain chemicals that are identical to the ones that could cause a vapor intrusion issue.[23] Unless background levels can be adequately identified, indoor air sampling may not be sufficient to identify a potential problem.

The good news is that cases involving serious exposure related to vapor intrusion are rare. Also, even if there is an actual risk, the corrective measures (such as sealing basement walls, closing gaps in utility entrances, and even placing impermeable barriers) are relatively inexpensive and easy to install, especially in new construction.[24]

Conclusion

Increased regulatory emphasis and the risk of tort liability make vapor intrusion an issue that a potential purchaser must consider before taking title to potentially impacted property. The current ASTM Phase I standard may not be clear as to whether vapor intrusion must be included as part of that assessment process, and state and federal regulatory agencies disagree as to how to approach the issue. ASTM is developing a standard for vapor intrusion investigation that may address these questions. Regardless of the conclusions reached by ASTM, potential tort and regulatory liability will make vapor intrusion an issue that potential property owners cannot afford to ignore.

Endnotes

1. Larry Schnapf, Vapor Intrusion Basics, available at http://www.abanet.org/environ/committees/siteremediation/newsletter/mar06/siteremediation0306.pdf.
2. *Id.*
3. Increased Scrutiny of Indoor Air Pathway Shifts Standards for Investigation and Clean-Up, Environmental Law Advisory (Goodwin Proctor), October, 2004.
4. *Id.*
5. Larry Schnapf, Vapor Intrusion Basics, available at http://www.abanet.org/environ/committees/siteremediation/newsletter/mar06/siteremediation0306.pdf.

6-7.*Id.*

8. Edward A. Kazmarek, Vapor Intrusion: Regulators Concerned About Potentially Volatile Situation, available at http://www.mckennalong.com/attachment/412/Environmental%20Advisory%2006-02-2006.pdf.
9. 42 U.S.C. § 9601 (35)(B) (2007).
10. Standards and Practices for All Appropriate Inquiries, 70 Fed. Reg. 66,070 (Nov. 1, 2005) (codified at 40 C.F.R. § 312).
11. See Standard Practice for Environmental Site Assessments: Phase I Environmental Assessment Process, ASTM 1527-05.
12. *See* ASTM 1527-05.
13. 40 C.F.R. § 312.11
14. ASTM 1527-05 § 1.1.
15. ASTM 1527-05 § 1.1.1.
16. ASTM 1527-05 § 13.1.5.12.
17. ASTM Hopes to Draft a Standard to Quell Vapor Intrusion Confusion, BNA, Volume 15, Number 6, , June 15, 2006.
18. Increased Scrutiny of Indoor Air Pathway Shifts Standards for Investigation and Clean-Up, Environmental Law Advisory (Goodwin Proctor), October 2004.
19. *Id.*
20. Edward A. Kazmarek, Vapor Intrusion: Regulators Concerned About Potentially Volatile Situation, available at http://www.mckennalong.com/attachment/412/Environmental%20Advisory%2006-02-2006.pdf.
21. *Id.*
22. Larry Schnapf, Vapor Intrusion Basics, available at http://www.abanet.org/environ/committees/siteremediation/newsletter/mar06/siteremediation0306.pdf.
23. *Id.*
24. Edward A. Kazmarek, Vapor Intrusion: Regulators Concerned About Potentially Volatile Situation, available at http://www.mckennalong.com/attachment/412/Environmental%20Advisory%2006-02-2006.pdf.

Message From the Chair

by Andrea Rimer
Troutman Sanders LLP

Thanks to everyone's hard work and support, I'm pleased to report that this year's Environmental Law Summer Seminar that took place July 27-28, at the Amelia Island Plantation was a huge success. Approximately 100 attendees heard from a diverse group of speakers on topics ranging from global climate change to developments in wetlands and marshlands protection, to brownfields redevelopment. I would especially like to thank all of the moderators and speakers for their hard work and for sharing their expertise and insights. I would also like to extend a special thank you to our many panelists from the state and federal governments, including Jimmy Palmer, regional administrator for USEPA Region 4; Susan Shipman, director of the Georgia DNR Coastal Resources Division; Mark Smith, chief of the Georgia EPD's Hazardous Waste Management Branch; Tom Welborn, chief of the Wetlands, Coastal and Watershed Branch at EPA Region 4; Kevin Horton from ATSDR; and Susan Coppedge, assistant U.S. Attorney, Northern District of Georgia.

In addition, I would like to thank our sponsors for their participation. NOVA Environmental and Engineering served as our Platinum Sponsor, and as co-sponsor of our Friday night reception, can be thanked for a truly memorable event. Our Gold and Silver Sponsors also significantly contributed to our success this year, and included: Arcadis, Atlanta Environmental Management (AEM), Brown and Caldwell, Geosyntec, Golder Associates, Premier Environmental, Shaw Environmental & Infrastructure, Terracon, Tetra Tech and Winter Environmental. I hope everyone who attended had a great time and found it to be a valuable and worthwhile experience. In addition, please mark your calendars for next year's Summer Seminar, Aug. 1-2, 2008, at the Crowne Plaza Hilton Head Island Beach Resort in Hilton Head Island, S.C. Chair-Elect Martin Shelton will chair next year's Summer Seminar, so please let him know if you have any ideas or suggestions.

Prior to the Summer Seminar, we kicked off the year with a great luncheon at Troutman Sanders in February, featuring David Pope, director of the Southern Environmental Law Center, and Peter Madsen from CH2MHILL and chair of the governor's Environmental Advisory Council, who each provided their perspectives on the state of the environment in Georgia. In May, EPA Region 4 hosted our first Brown Bag lunch seminar, during which Alan Dion, acting branch chief of Air Toxics & General Law, EPA Region 4 and Blan Holman of the Southern Environmental Law Center provided their insights into the Supreme Court's decision in the Clean Air Act, New Source Review case, *Environmental Defense v. Duke Energy*. Both events were well attended and we thank all our speakers and organizers for helping make these events a success.

We hope to have another Brown Bag lunch before the end of the year, and are exploring potential topics. Please let me or any of our other officers know if you're interested in organizing a panel for a Brown Bag lunch, and/or are willing to host. Please also let us know if you have any questions or suggestions regarding this year's programs. We appreciate your participation in the section.

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