Abstract

This article analyzes the regulatory framework applicable to mercury emissions from coal-powered plants. In particular, I examine the statutory means to close the regulatory gap that results from the principal problem of atmospheric deposition of mercury. The three acts I address are: (1) the Clean Air Act; (2) the Clean Water Act; (3) and the National Environmental Policy Act. The three regimes contain certain limitations as written by Congress or as implied by the courts through judicial interpretation. Although some options may be more litigation friendly, all are theoretically available.

Myths of Coal's Clean Future: The Story of Methylmercury

I. Introduction

Three years ago, the U.S. Senate Committee on Finance convened a hearing before the Subcommittee on Energy, Natural Resources, and Infrastructure entitled "Coal: A Clean Future."[1] Senator Bingaman of New Mexico prepared the opening statement and addressed a small group of senators and representatives from the private sector. The discussion operated on the presumption that advanced coal technologies had solved the acid rain crisis of the 1970s and would be the solution to clean energy initiatives addressing future regulation. But while technological developments were successful in decreasing the emissions output of SO_2 and NO_x, the developments were a response to regulatory incentives and involvement and were not a consequence of industry initiative.

Coal provides more than half of the United States' electricity needs in more than 1,100 coal-fired boilers across the nation.[2] In 2006, coal plant operational capacity sat between 80% and 85% with an expected need of 50% more electricity capacity by 2030.[3] And as more states rely on coal derived electricity, the economic costs indicate a trend towards efficiency.[4] These figures largely represent the optimism of economies of scale but certainly do not account for the

---

[1] *Coal: A Clean Future: Hearing Before the Subcomm. on Energy, Natural Resources, and Infrastructure of the S. Comm. On Finance*, 110th Cong. 1 (2007).

[2] *Id.* (statement of Dr. Nina French, director, Clean Coal Combustion, ADA−Environmental Solutions).

[3] *Id.*

[4] *Id.*

costs associated with the extraction and combustion of coal.[5] If we look at the lifecycle of a lump of coal, the numbers simply do not add up.

From extraction to refinement and use, today's coal industry operates between the reach of major U.S. environmental acts and regulations. But unrestricted access and use of coal is receiving considerable press scrutiny as the industry attempts to green its public image.[6] Nevertheless, current steps to re-brand the industry should not absolve it from existing technological shortcomings and immunize it from regulatory challenges. Coal's clean future cannot develop on its own initiative.

In particular, mercury presents a unique problem for both the U.S. Environmental Protection Agency ("EPA") and communities subject to mercury emissions. Inorganic mercury is a heavy metal associated with the combustion of coal. Unlike with most gaseous pollutants, mercury is deposited onto land and waterbodies neighboring or downwind from a combustion facility. The problem for the EPA is twofold: 1) It is difficult to regulate through the Clean Air Act because the greatest human impact is not from ambient inorganic mercury but from

---

[5] A Kentucky study showed that the economic costs to the state exceeded the net revenue produced from attracting coal companies to extract the resource in the Appalachian range. *See* Melissa Fry Konty & Jason Bailey, Mountain Ass'n for Cmty. Econ. Dev., *The Impact of Coal on the Kentucky State Budget* 23 (2009) ("[T]he state spends nearly $643 million on coal-related infrastructure, regulation, tax preferences, research, training and other expenses for an annual net fiscal impact of -$115 million.").

[6] *See e.g.*, Frances Beinecke, *There Is No "Clean Coal," But Obama is Right about an Energy and Climate Bill*, NRDC BLOG, (Feb. 3, 2010), http://switchboard.nrdc.org/blogs/fbeinecke/there_is_no_clean_coal_but_oba.html (explaining that "[e]very single step in the coal power cycle is dirty, from the profoundly destructive mountaintop removal mining to the smokestack emissions, which are responsible for 24,000 deaths a year"); Editorial, *The Coal Ash Case*, N.Y. TIMES, Jan. 19, 2010, *available at* http://www.nytimes.com/2010/01/20/opinion/20wed4.html (illustrating that "America's power plants produce 130 million tons of coal ash a year, enough to fill a train of boxcars stretching from the District of Columbia to Australia"); Charles Duhigg, *Cleansing the Air at the Expense of Waterways*, N.Y. TIMES, Oct. 12, 2009, *available at* http://www.nytimes.com/2009/10/13/us/13water.html ("Even as a growing number of coal-burning power plants around the nation have moved to reduce their air emissions, many of them are creating another problem: water pollution.").

deposited organic methylmercury,[7] and 2) it is difficult to regulate through the Clean Water Act because air discharges are not typically considered "point source" discharges. And as a non-point source discharge, the regulation of mercury is delegated to the states.[8] Thus, mercury can fall between regulatory gaps if a state chooses to let it.

This paper addresses the regulatory challenges faced by environmental groups seeking to prevent the discharge of mercury into waterways. First, it lays out the relationship between coal and mercury pollution and briefly summarizes the environmental and health impacts of mercury. Second, it identifies the primary statutory regimes that are available to EPA, and explains the regulatory gap created by EPA through electric utility delisting under the Clean Air Act that would normally exist for a hazardous air pollutant. Following the Clean Air Act, I outline challenges under the Clean Water Act and examine whether smokestacks should be considered point sources for the purposes of the Clean Water Act, which triggers permitting requirements under the National Pollutant Discharge Elimination System ("NPDES").[9] Alternatively, if a waterway is already listed as mercury impaired, states must establish a TMDL program, which allows an agency to target and regulate non-point sources of mercury pollution. Additionally, I look to the Anti-degradation Clause of the Clean Water Act as a vehicle to prevent the issuance of a permit under the Clean Air Act. And finally, I argue that the National Environmental Policy Act ("NEPA") is an appropriate channel to bridge the regulatory gaps between the Clean Water Act and the Clean Air Act through proper scoping in environmental review.

II. An Assessment of Coal

[7] *See* discussion *infra*.

[8] 33 U.S.C. §1329(a) (2006).

[9] 33 U.S.C.S. § 1342.

In 1987, the Organisation for Economic Co-operation and Development ("OECD") identified an array of issues implicated by coal extraction and use. At the production stage, some of the principal concerns of the public and government include: problems of mine spoil and other solid waste disposal (e.g., for coal preparation plants); reclamation of derelict land caused by past mining practices; drainage from mines, coal and spoil piles to water courses; restoration of surface-mined land and minimization of disruptions to local communities; damage to land and buildings as a result of mining subsistence; problems arising from coal transportation and storage; and problems with occupational health.[10] And in utilization, the problems extend to: siting of power plants; protection of ambient air quality in the immediate vicinity of the plant; the appropriate level of control of emissions of major air pollutants involved in long-range transport and acid deposition; the disposal or re-use of solid wastes; the related issue of trace metal release to the environment; and the contribution of CO_2 emissions from coal burning atmospheric CO_2 build-up.[11] The OECD explained that "[t]hese issues span all three environmental media—air, water, and land."[12] In this, regulating the coal industry cannot be confined to a single medium, because the solutions under one regime are transformed into a problem under another.[13]

[10] Organisation for Economic Co-operation and Development, COAL – ENVIRONMENTAL POLICIES AND INSTITUTIONS 8 (OECD ed., 1987). In the United States, mountaintop removal mining is the primary form of strip mining in which coal companies use explosives to blast off the tops of mountains in order to reach the coal seams hidden underneath. For an in-depth discussion of the history of coal mining in Appalachia, and the environmental, economic and health impacts of mountaintop removal mining, see Brief for W. Va Council of Churches as Amicus Curiae Supporting Petitioners, Ohio Valley Envtl Coal., et al. v. U.S. Army Corps of Eng'rs, et al., 556 F.3d 177 (4th Cir. 2009) *petition for cert. filed*, (U.S. Aug. 26, 2009) (09-247), 2009 WL 3155381.

[11] *See id. at* 9.

[12] *Id.*

[13] *See e.g.*, Charles Duhigg, *Cleansing the Air at the Expense of Waterways*, *supra* note 6.

A. Coal Combustion Products[14] and Mercury

Coal Combustion Products ("CCPs") are created by the combustion of coal for energy and predominantly consist of fly ash,[15] bottom ash,[16] boiler slag,[17] and flue gas desulfurization residue.[18] The precise environmental hazards associated with CCPs are determined by the particular composition of toxic metals and metalloids. And "[w]hile the metal (loid) content of CCPs reflects that of the parent coal, the most commonly found elements of concern are boron, molybdenum, arsenic and selenium. A variety of other metals have also been reported in CCPs, such as nickel, cadmium, mercury, and lead." In addition to the production of CCPs, this paper is concerned with the release of mercury through coal combustion.

---

[14] EPA conducted two regulatory determinations on the management and use of coal combustion products in 1993 and 2000. The 2000 regulatory determination recommended a separate review addressing the use of coal combustion wastes as fill for surface or underground mines, which is currently underway. *See* U.S. Envtl Protection Agency, *Wastes – Resource Conservation – Reduce, Reuse, Recycle – Industrial Materials Recycling*, http://www.epa.gov/osw/conserve/rrr/imr/ccps/resources.htm (last visited Mar. 29, 2010). The U.S. Department of Transportation Highway Research Center studied the use of coal combustion products in cement mixtures for highway construction. *See* U.S. Dept. of Transportation, *Coal Bottom Ash/Boiler Slag – Material Description*, http://www.tfhrc.gov/hnr20/recycle/waste/cbabs1.htm (last visited Mar. 29, 2010). *See also* EPA, USING COAL ASH IN HIGHWAY CONSTRUCTION: A GUIDE TO BENEFITS AND IMPACTS (2005), *available at* http://www.epa.gov/waste/partnerships/c2p2/pubs/greenbk508.pdf.

[15] Fly ash is a fine powder collected by mechanical filters or electrostatic precipitators from the flue gas during coal combustion. *See* Kenneth S. Sajwan, Tracy Punshon, and John C. Seaman, *Production of Coal Combustion Products and Their Potential Uses*, *in* COAL COMBUSTION BYPRODUCTS AND ENVIRONMENTAL ISSUES 4 (Kenneth Sajwan, Irena Twardowska, Tracy Punshon, and Ashok Alva, eds. 2006).

[16] Bottom ash is the uncombusted material that settles to the bottom of the boiler. It is granular and similar to concrete sand. *See id.*

[17] Boiler slag is the drained molten material formed when operating temperatures exceed ash fusion temperature. It is a shiny, black granular material with abrasive properties. *See id.*

[18] Flue gas desulfurization residue is an alkaline material captured by flue-gas scrubbing systems ("scrubbers"). With the Clean Air Act Amendments of 1990, more stringent restrictions were placed on coal-fired power plants to regulate the release of sulfur oxide (SO2), leading many utility companies to switch to low-sulfur coal and retrofit power plants with scrubbers. *Id.*

In its basic state, mercury (Hg) is an inorganic element, largely useful in science and technology. Despite its scientific applications, mercury is extremely toxic and is characterized as a "global pollutant" that the U.S. Geological Survey ("USGS") found would "make[] its way into every aquatic ecosystem through the hydrologic cycle."[19] In 1998, the EPA Office of Air Quality Planning and Standards released a report identifying "a plausible link between anthropogenic releases of mercury from industrial and combustion sources in the United States and methylmercury in fish" and noted that "mercury emissions from [coal fired utilities] may add to the existing environmental burden."[20] Today, EPA recognizes that "[m]ercury in the air may settle into water bodies and affect water quality."[21] In fact, studies show that approximately 67 percent of the total mercury in atmospheric deposition may be attributed to anthropogenic (human-related) sources.[22] However, aerial deposition of mercury is not confined to immediate entry into waterbodies, such as rivers and wetlands, but may also settle onto land. The dry deposited mercury may then either seep into ground water aquifers or become land-based runoff that transports the mercury into neighboring waterbodies.[23] Herein lies the regulatory problem. But first, a background on its effects.

B. Environmental Costs

---

[19] Barbara C. Scudder, Lia C. Chasar, Dennis A. Wentz, Nancy J. Bauch, Mark E. Brigham, Patrick W. Moran, and David P. Krabbenhoft, Mercury in Fish, Bed Sediment, and Water from Streams Across the United States, 1998–2005 1 (U.S. Geological Survey 2009).

[20] U.S. Envtl Protection Agency, Office of Air Quality Planning and Standards, Study of Hazardous Air Pollutant Emissions from Elec. Util. Steam Generating Units—Final Report to Cong. 7-1, 45 (1998).

[21] U.S. Envtl Protection Agency, *Mercury; Environmental Effects*, http://www.epa.gov/mercury/eco.htm (last visited Mar. 29, 2010).

[22] Scudder, et al., *supra* note 19 at 1.

[23] *See* U.S. Envtl Protection Agency, *Mercury; Human Exposure*, http://www.epa.gov/mercury/exposure.htm#3 (last visited Mar. 29, 2010).

Once mercury enters an aquatic system, anaerobic organisms transform the inorganic mercury (Hg) into methylmercury (MeHg), an organicometallic cation, through a process called methylation.[24] This process greatly magnifies mercury toxicity and bioaccumulation potential.[25] In fact, studies estimate that the bioaccumulation potential for methylmercury is a thousand times that of inorganic mercury.[26]

Mercury methylation occurs at the highest rates by sulfur-reducing bacteria in anoxic environments. Aquatic systems that exhibit characteristics for high mercury methylation are considered to be 'mercury sensitive.' Such systems include "wetlands, low alkalinity or low pH lakes, surface waters with upstream or adjoining wetlands, waters with adjoining or upstream terrestrial areas subjected to flooding, and dark-water lakes and streams."[27] Wetlands are thought to be the most mercury sensitive waters, since their characteristics allow for enhanced mercury methylation. These characteristics include "an abundance of labile carbon substrates and dissolved organic matter, anaerobic sediments, high microbial activity, and seasonal water-level fluctuations."[28] Specifically, re-wetting cycles associated with flooding greatly increase rates of methylation. This 'reservoir effect' causes temporary increases in mercury methylation due to enhanced microbial activity.

Once transformed, aquatic organisms obtain methylmercury through a variety of sources, such as from food, water, and sediment. Because biological elimination of methylmercury "is very slow relative to the rate of uptake," continued exposure results in bioaccumulation and

---

[24] Scudder, et al., *supra* note 19 at 1.

[25] *Id.*

[26] *Id.*

[27] *Id.*

[28] *Id.*

biomagnification.[29] Once in the aquatic food web, the concentration of methylmercury magnifies as it passes through each trophic level.[30] In fact, at higher trophic levels, some fish exhibit concentrations of methylmercury that exceed the ambient surface water (<1 ng Hg/L) by a factor of 10^6 or 10^7.[31]

C. Human Health Impacts

In contrast to elemental (metallic) mercury, which is predominantly inhaled or ingested through accidental exposure, methylmercury bioaccumulates in fish tissue, making it a threat to wildlife and humans through regular consumption. Approximately 95 percent or more of the mercury found in most fish tissue is methylmercury, which prompted the first-ever joint consumer advice effort between the EPA and the Food and Drug Administration about methylmercury in fish and shellfish.[32]

Once consumed by humans, methylmercury acts as a neurotoxin and is harmful to adults, children, infants, and fetuses. Additionally, exposure to large amounts of methylmercury can result in neurological and kidney disorders. [33] Children exposed to methylmercury in the womb may experience negative neurological developments, including impaired cognitive thinking,

---

[29] James G. Wiener, David P. Krabbenhoft, Gary H. Heinz, Anton M. Scheuhammer, *Ecotoxicology of Mercury*, *in* HANDBOOK OF ECOTOXICOLOGY 33 (2d ed. 2002).

[30] Trophic levels are determined by the appropriate habitation level of an organism on the food chain. In aquatic systems, the highest levels (usually large fish) may be categorized trophic levels 4 or 5, whereas primary producers (plants/phytoplankton) are level 1.

[31] *See* Wiener, et al., *supra* note 29.

[32] U.S. Envtl Protection Agency, *Mercury; Human Exposure*, http://www.epa.gov/mercury/exposure.htm (last visited Mar. 29, 2010).

[33] *Blood Mercury Levels in Young Children and Childbearing-Aged Women – United States, 1999-2002*, Center for Disease Control, Nov. 5, 2004, http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5343a5.htm (last visited Mar. 5, 2010).

memory, attention, language, and fine motor and visual spatial skills.[34] Evidence suggests that the developing nervous systems of the fetus are particularly vulnerable to methylmercury poisoning even if the mother shows no symptoms of nervous system damage.[35] Although there is currently no known human data suggesting a link between mercury poisoning and cancer,[36] the intergenerational effects of mercury poisoning make regulation critically important to the health and welfare of future generations.

III. The Statutory Elements

EPA has authority to control and limit mercury exposure under the Clean Air Act, Clean Water Act, Resource Conservation and Recovery Act, and the Safe Drinking Water Act. Within each statutory framework, EPA has some discretionary power to regulate mercury in line with the broader purpose of each act to protect the environment and human health. This section focuses on two of those regimes, the Clean Air Act and the Clean Water Act, and explores the scope and limits of each regime. Finally, it advocates the use of environmental review under the National Environmental Policy Act as a procedural tool for considering the effects of atmospheric deposition. This paper does not address the disposal of hazardous material created by the incineration of coal under the Resource Conservation and Recovery Act.

A. The Clean Air Act

[34] U.S. Envtl Protection Agency, *Mercury; Health Effects*, http://www.epa.gov/mercury/effects.htm (last visited Mar. 29, 2010).

[35] *Id.*

[36] However, "[m]ercuric chloride has caused increases in several types of tumors in rats and mice, and methylmercury has caused kidney tumors in male mice. Scientists only observed these health effects at extremely high doses, above levels that produced other effects." *Id.*

The Clean Air Act was passed by Congress in 1970 and amended in 1990. Under the Clean Air Act, EPA sets quantitative limits on a pollutant that is allowed in the air in the United States and issues permits for large sources that release pollutants into the air. The permits require information on which pollutants are being released, how much is released, what steps are being taken to reduce pollution, and monitoring plans. Through the establishment of national ambient air quality standards (NAAQS), EPA has controlled six principal air pollutants, also known as criteria pollutants, carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide.

Section 112 of the Clean Air Act, governs federal control of hazardous air pollutants, or HAPs, which are "known to be, or may reasonably be anticipated to be, carcinogenic, mutagenic, teratogenic, neurotoxic, which cause reproductive dysfunction, or which are acutely or chronically toxic" or which cause "adverse environmental effects whether through ambient concentrations, bioaccumulation, deposition, or otherwise…."[37] Currently, 187 air toxics have been identified, including dioxin, asbestos, toluene, and metals such as cadmium, mercury, chromium, and lead compounds.[38] Unlike with criteria pollutants, emissions standards for HAPs depend primarily on one factor: whether the stationary source is considered a major source of HAPs. Under section 112, a stationary source of HAPs is a "major source" if it "emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants."[39] For each HAP, national emissions standards for hazardous air pollutants

[37] CAA § 112(b)(2), 42 U.S.C. § 7412(b)(2).

[38] U.S. Envtl Protection Agency, *Technology Transfer Network; Air Toxics Web Site*, http://www.epa.gov/ttn/atw/allabout.html#what (last visited Mar. 29, 2010).

[39] CAA § 112(a)(1), 42 U.S.C. § 7412(a)(1).

("NESHAPs") are calculated to limit the release of a HAP from specific industrial sectors based on the maximum available control technology ("MACT").[40] In determining the maximum degree of reduction for emissions of the hazardous air pollutants, EPA considers "the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements . . . ."[41]

In 2005, EPA promulgated a delisting rule which removed coal- and oil-fired electric utility steam generating units ("EGUs") from the list of sources whose emissions are regulated under section 112 of the Clean Air Act.[42] EPA followed the delisting rule with the Clean Air Mercury Rule ("Mercury Rule") under section 111(d).[43] The Mercury Rule included a voluntary cap-and-trade program for new and existing coal-fired EGUs and set performance standards pursuant to section 111.[44] The rule was challenged by fifteen states and other government petitioners as well as by various environmental organizations. The D.C. Circuit found the rule inconsistent with the Clean Air Act in *New Jersey v. EPA*.

The court explained that in 1990, Congress had eliminated much of EPA's discretion by restricting "the opportunities for EPA and others to intervene in the regulation of HAP sources."[45] Because EPA announced on December 20, 2000, that it was "appropriate and necessary" to regulate coal- and oil-fired EGUs under section 112, the Court found that

---

[40] CAA § 112(g)(2)(A), 42 U.S.C. § 7412(g)(2)(A).

[41] CAA § 112(d)(2), 42 U.S.C. § 7412(d)(2).

[42] Revision of December 2000 Regulatory Finding ("Delisting Rule"), 70 Fed. Reg. 15,994 (Mar. 29, 2005).

[43] Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units ("CAMR"), 70 Fed. Reg. 28,606 (May 18, 2005).

[44] *Id.*

[45] *See* New Jersey v. EPA, 531 F.3d 896 (D.C. Cir. 2008).

> "[f]or HAPs that result in health effects other than cancer, as is true of mercury, Congress directed that the Administrator 'may delete any source category' from the section 112(c)(1) list only after determining that 'emissions from no source in the category or subcategory concerned . . . exceed a level which is adequate to protect public health with an ample margin of safety and no adverse environmental effect will result from emissions from any source.'"[46]

Once EPA determined that EGUs "should be regulated under Section 112 and listed them under section 112(c)(1), EPA had no authority to delist them without taking the steps required under section 112(c)(9)."[47] Accordingly, the court vacated the Delisting Rule and the Mercury Rule's regulations for both new and existing EGUs.[48]

Currently, EPA is in the process of developing air toxics emissions standards for power plants under section 112 of the Clean Air Act, consistent with the D.C. Circuit opinion from 2008. EPA intends to finalize the rule by November 16, 2011, for coal powered plants.[49] In the meantime, EPA's Office of Management and Budget approved an Information Collection Request that requires all coal- or oil-fired power plants to submit emissions information for use in developing the proposed emissions rule for air toxics.[50]

B. The Clean Water Act

The Clean Water Act imposes federally-set technology-based effluent limitations and permit requirements onto the existing system of state water quality standards in order to "restore

---

[46] *Id.*

[47] *Id.*

[48] *Id.*

[49] U.S. Envtl Protection Agency, *Clean Air Mercury Rule*, http://www.epa.gov/air/mercuryrule/ (last visited Mar. 29, 2010).

[50] U.S. Envtl Protection Agency, *Technology Transfer Network; Air Toxics Web Site*, http://www.epa.gov/ttn/atw/utility/utilitypg.html (last visited Mar. 29, 2010).

and maintain the chemical, physical, and biological integrity of the Nation's waters."[51] The "national goal" of the Clean Water Act is to achieve "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water."[52] "To do this, the Act does not stop at controlling the 'addition of pollutants,' but deals with 'pollution' generally, which Congress defined to mean 'the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water.'"[53]

The main statutory trigger for federal jurisdiction under the Clean Water Act is found in section 301(a), which states: "Except as in compliance with this section and sections 1312, 1316, 1317, 1328, 1342, and 1344 of this title, the discharge of any pollutant by any person shall be unlawful."[54] The Clean Water Act defines "discharge of a pollutant" as:

> "(A) any addition of any pollutant to navigable waters from any point source, [and] (B) any addition of any pollutant to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft."[55]

As already discussed, coal-fired utility plants release inorganic mercury into the atmosphere that ultimately deposits directly or indirectly onto waterways. And through methylation and bioaccumulation, methylmercury makes its way through ecosystems and into human tissue, causing serious immediate and intergenerational health effects.

a. Addition of a pollutant from a point source

[51] CWA § 101(a), 33 U.S.C. § 1251(a).

[52] CWA § 101(a)(2), 33 U.S.C. § 1251(a)(2).

[53] S. D. Warren Co. v. Me. Bd. of Envtl. Prot., 547 U.S. 370, 385 (2006) (internal citations omitted).

[54] CWA § 301(a), 33 U.S.C. § 1311(a).

[55] CWA §502(14), 33 U.S.C. § 1362(14).

Before issuing a federal NPDES permit, an agency must first find that the pollutant conveyance is from a point source. The Clean Water Act explains that a point source is a

> "discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged."[56]

A typical industrial smokestack is a tall vertical pipe used to disperse the waste produced from combustion in a boiler, stove, furnace, or fireplace. The stacks are typically vertical to encourage the drawing of air through the flue, or the space inside the stack. Increasing the height of a stack increases the draw of air for combustion and has the effect of dispersing pollutants over a greater area. As a discernible and confined structure, smokestacks are unquestionably a point source of mercury emissions. The critical factor, however, is the precise definition of "discharge" for the purposes of federal jurisdiction under the Clean Water Act.

In 1997, the Court of Appeals for the Tenth Circuit addressed the issue of whether a permit for stack emissions authorized under the Clean Air Act bars an action against the emissions under the Clean Water Act, in *Chemical Weapons Working Group, Inc. v. United States Department of the Army*.[57] In that case, the plaintiff citizen groups attempted to bring an action against the Army under section 301(f) of the Clean Water Act to prevent the Army from incinerating chemical weapons pursuant to a valid Clean Air Act permit.

The plaintiffs argued that the emissions would eventually find their way into the navigable waters, thereby constituting a "discharge" into those waters.[58] The Court of Appeals rejected that argument, stating that it "would lead to irrational results" and that "common sense

---

[56] CWA §502(14), 33 U.S.C. § 1362(14).

[57] 111 F.3d 1485, 1490 (10th Cir. 1997).

[58] *Id.*

dictates that . . . stack emissions constitute discharges to air - not water - and are therefore beyond" the Clean Water Act's reach.[59] The court also rejected the plaintiffs' Clean Water Act claim because "it would create a regulatory conflict between the Clean Water Act and Clean Air Act."[60] It found that "because [the] Clean Air Act permit specifically allows the discharges that [p]laintiffs claim are barred under [the] Clean Water Act . . ., applying [the Clean Water Act] to [the] stack emissions would create an irreconcilable conflict between the two regulatory schemes."[61] Accordingly, the court refused to apply the restrictions of the Clean Water Act on the activities authorized by the Clean Air Act.

Later that year, the District of Oregon elaborated on the Tenth Circuit's "common-sense" approach and read into the Clean Water Act a requirement of "immediacy." In *Umatilla Waterquality*, the plaintiffs maintained that the Clean Water Act required a NPDES permit for discharges of pollutants to hydrologically-connected groundwater. The court disagreed. Though it based its holding on the legislative history of the Clean Water Act, the court also found support from *Chemical Weapons* and reasoning that

> "[t]he Tenth Circuit articulated a 'common-sense' approach to the definition of 'discharge into the navigable waters' for NPDES purposes in which it held that a discharge of pollutants into another medium -- in that case, air -- that incidentally reached navigable waters were beyond the Act's reach. In essence, the Tenth Circuit distinguished discharges where navigable waters were the immediate destination from discharges where the pollutants actually mixed in with an intervening medium: the former could constitute discharges to navigable water for Clean Water Act purposes, while the latter were, in common-sense terms, discharges to the intervening medium and not discharges to navigable water."[62]

---

[59] *Id.*

[60] *Id.*

[61] *Id.* at 1490-1.

[62] Umatilla Waterquality Protective Ass'n v. Smith Frozen Foods, 1997 U.S. Dist. LEXIS 16458, 10-11 (D. Or. 1997) (*citing* Chemical Weapons Working Group, Inc. v. U.S. Dept. of the Army, 111 F.3d at 1490).

In a footnote, the court deferred to the polluter's intent in determining which medium a pollutant was destined. It explained that "fish stocking of lakes and other navigable waters via air drops *are* subject to the NPDES permit requirement. The fish's destination is the water, and they never mix in with the air. As such, no common-sense view of fish stocking would suggest that the fish are discharged to air."[63]

However, in 2005, the Southern District of New York seemed to reject the immediacy condition, explaining that the language of the Clean Water Act is discernable: a discharge of a pollutant includes *any addition* of any pollutant to navigable waters *from any* point source.

> "[I]n order to determine whether a pollutant was discharged, there must have been 'an addition' of a pollutant. Although the statute has not defined 'addition,' the Second Circuit, in Catskill Mountains, 273 F.3d at 491, adopted the position proffered by the EPA in National Wildlife Federation v. Gorsuch, 224 U.S. App. D.C. 41, 693 F.2d 156 (D.C.Cir. 1982) that for there to be an 'addition,' a 'point source must introduce the pollutant into navigable water from the outside world.' Catskill Mountains, 273 F.3d at 491 (citing Gorsuch, 693 F.2d at 165). The Second Circuit added one caveat, agreeing with the D.C. Circuit's view, which 'provided that [the term] outside world is construed as any place outside the particular water body to which pollutants are introduced.'"

The court explained that the spraying of pesticides into navigable waters could constitute "an addition" under the Clean Water Act. It reasoned that "an addition is 'the action or process of adding something to something else.'"[64]

The court stated further that "[t]he amount that is discharged does not affect a finding that an addition has taken place. Nor does the fact that the pesticide is initially sprayed into the air as a fine mist, if the mist descends downward into the water."[65] In fact, "it would be unreasonable to distinguish between a sprayer releasing a fine mist

---

[63] *Id. at* n.2.

[64] No Spray Coalition, Inc. v. City of New York, 2005 U.S. Dist. LEXIS 11097, 12-13 (S.D.N.Y. June 7, 2005) (*citing* The New Oxford American Dictionary, 18 (Elizabeth J. Jewell & Frank Abate eds., 2001)).

[65] *Id.*

pollutant into the atmosphere over the water and a pipe that released the same single flow of pollutant directly into water."[66] The court warned that "[v]iolators of the [Clean Water Act] would then need only to attach an airborne mist blower or hydraulic sprayer to their pipe to discharge a pollutant over the water in order to escape liability or regulation."[67]

Though *No Spray* and *Chemical Weapons* appear to reach opposing conclusions, it could be argued that the distinguishing feature is merely whether the discharged pollutants properly fall under the ambit of the Clean Air Act or the Clean Water Act. Both courts appear to acknowledge the necessity of a permit for the activity concerned, but *Chemical Weapons* is apprehensive about extending the Clean Water Act's coverage over pollutants that are already covered under the Clean Air Act. Similarly, in *No Spray*, the court refused to create a loophole from *any* regulatory oversight by allowing the polluters to avoid permitting, merely because the chemicals were sprayed as a mist and discharged into the air.

Because EPA intends to introduce HAP regulation for mercury emissions under the Clean Air Act, courts may be reluctant to broaden the scope of the Clean Water Act to regulate discharges of mercury that ultimately contaminate a waterbody. Conversely, allowing coal-plant operators to avoid Clean Water Act regulations by merely dispersing a pollutant over a greater area so as to fall within a permitted emission level under the Clean Air Act would, as the Tenth Circuit warned, "create an irreconcilable conflict between the two regulatory schemes."[68] Nevertheless, even if a court were to find that a

---

[66] *Id.*

[67] *Id.*

[68] Chemical Weapons Working Group, Inc., 111 F.3d at 1490-1.

smokestack emitting mercury did not constitute a point source discharge, coal-powered plants could be regulated as non-point sources through a TMDL program.

b. 303 Impairment and the TMDL program

The Clean Water Act mandates that all states set Water Quality Standards ("WQS") for "all waters of the United States" and requires all states to monitor those waters to determine if those standards are met.[69] The WQS is determined based on a waterbody's designated uses. If a waterbody does not meet its WQS, the waterbody is listed as impaired pursuant to section 303(d) of the Clean Water Act. Pursuant to section 303, states are required to submit a 303(d) list, which lists all impaired waters, every two years to the EPA.[70]

Once a waterbody is listed, section 303(d)(1)(C) requires states to establish, in accordance with the priority ranking established under section 303(d)(1)(A), "the total maximum daily load [("TMDL")], for those pollutants which the Administrator identifies . . . as suitable for such calculation."[71] The TMDL shall be established "at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality."[72] Upon EPA approval of the plan, the TMDL is then used to regulate both point and non-point sources and aims to restore the integrity of the waterbody.[73]

---

[69] CWA § 304(a)(1).

[70] 40 CFR § 130.7.

[71] 33 U.S.C. § 303(d)(1)(A).

[72] *Id.* § 303(d)(1)(C).

[73] *See* Pronsolino v. Nastri, 291 F.3d 1123 (9th Cir. 2002).

Because of the serious health concerns associated with mercury magnification from fish consumption, the EPA Office of Water issued a guidance document on the use of fish consumption advisories in determining attainment of water quality standards and listing impaired waterbodies under section 303(d) of the Clean Water Act. The guidance document explained that under the Clean Water Act, states are required to protect the public health and adopt water quality standards that are consistent with that purpose. It continued: "EPA considers fish and shellfish tissue pollutant concentrations a scientifically defensible basis for determining attainment of water quality standards . . . [and] fish and shellfish consumption advisories and NSSP classifications . . . should be used as a source of data and information for section 303(d) determinations."[74] Nevertheless, TMDL programs have been reluctantly enacted because of the high costs of implementation and are sometimes viewed as a backdoor to unconstitutional federal regulation of state land. The following discusses a proposed rule change to the TMDL program and the steps the EPA has taken at regulating non-point sources of mercury deposition.

i. The Proposed July 2000 Rule[75]

In May and June of 2000, the U.S. Senate Subcommittee on Fisheries, Wildlife, and Water discussed S. 2417, the Water Pollution Program Enhancements Act of 2000, and the proposed EPA rule concerning TMDL levels and NPDES permits. Senator Crapo of Idaho opened the hearing explaining that "Federal, State and local partnerships are the only means by

[74] U.S. ENVTL PROTECTION AGENCY, OFFICE OF WATER, GUIDANCE DOCUMENT (2000), *available at* http://www.epa.gov/waterscience/standards/library/shellfish.pdf.

[75] Revisions to the Water Quality Planning and Management Regulation and Revisions to the National Pollutant Discharge Elimination System Program in Support of Revisions to the Water Quality Planning and Management Regulation, 65 Fed. Reg. 43,586 (July 13, 2000) (to be codified at 40 C.F.R. pts. 9, 122, 123, 124, & 130).

which we can be successful in carrying out the measures that will result in a healthy environment . . . ."[76]

The July 2000 Rule proposed several changes that would substantially affect the TMDL program. The Rule explicitly brought in non-point sources of pollution into the TMDL framework,[77] it set a ten year deadline for the establishment of TMDLs,[78] and it required all impaired water bodies to be placed on a four-part list and prioritized.[79] States were also required to provide an implementation plan and a reasonable assurance that TMDL wasteloads and load allocations would be met.[80]

It was the underlying concern of regulating non-point sources, which attracted the ire of lobbyists and interest groups and prompted the American Farm Bureau Federation to file a petition challenging the regulation.[81] The costs of mandatory implementation were also staggering: EPA circulated a draft report on the total estimated costs of the TMDL program, which reported that the costs to the industry to implement the TMDL program could range from under $1 billion to $4.3 billion annually.[82] Because of the concerns rooted in traditional boundaries of federalism, EPA announced a delay to the effective date of the final regulation

---

[76] *Proposed Rule Changes to the TMDL and NPDES Permit Program: Hearings Before the Subcomm. on Fisheries, Wildlife, and Water of the S. Comm. On Env. and Public Works*, 106th Cong. 2 (2000) at 2, *available at* http://ftp.resource.org/gpo.gov/hearings/106s/66381.pdf.

[77] 65 Fed. Reg. 43,588.

[78] *Id. at* 43,590-91.

[79] *Id. at* 43,590.

[80] *Id. at* 43,591.

[81] Am. Farm Bureau Fed'n v. Browner, No. 00-1320 (D.C. Cir. July 18, 2000).

[82] U.S. ENVTL PROTECTION AGENCY, THE NATIONAL COSTS OF THE TOTAL MAXIMUM DAILY LOAD PROGRAM (DRAFT REPORT) (2001).

from October 1, 2001 to April 30, 2003.[83] By March 2003, EPA signed a final rule withdrawing the proposed July 2000 Rule.

ii. Of concern to federalism, the voluntary approach

Despite the setbacks in setting a mandatory TMDL program for non-point sources, EPA continued to pursue federal, state and local partnerships for rehabilitating national waters. Specifically, EPA actively worked towards a way to address the deposition of airborne mercury into local water bodies. In January of 2001, the EPA announced a progressive plan between the Office of Air & Radiation ("OAR") and the Office of Water ("OW") that was aimed at giving states the tools to evaluate atmospheric deposition of mercury into water bodies and to incorporate air emissions into TMDLs and other water quality analysis.[84] The plan was commenced on January 18th, 2001, and EPA commissioned two major case studies in Devils Lake, Wisconsin and the Florida Everglades. The Florida study was released in November of 2003,[85] and the Devils Lake study was released in March 2006.[86] These two studies clearly show that states can accurately track airborne mercury emissions to determine where they will be deposited. The REMSAD model used for the Devils Lake study has been peer reviewed and

---

[83] Delay of Effective Date of Revisions to the Water Quality Planning and Management Regulation and Revisions to the National Pollutant Discharge Elimination System Program in Support of Revisions to the Water Quality Planning and Management Regulations; and Revision of the Date for State Submission of the 2002 List of Impaired Waters, 66 Fed. Reg. 41,817 (Aug. 9, 2001).

[84] U.S. Envtl Protection Agency, *Technology Transfer Network OAR Policy and Guidance, OAR Policy and Guidance Metarecord*, http://www.epa.gov/ttncaaa1/t3/meta/m10050.html (last visited Mar. 29, 2010).

[85] Florida Dept. Envtl. Prot., Integrating Atmospheric Mercury Deposition with Aquatic Cycling in South Florida (2003), *available at* ftp://ftp.dep.state.fl.us/pub/labs/assessment/mercury/tmdlreport03.pdf.

[86] U.S. ENVTL PROTECTION AGENCY, MERCURY INPUTS AND CYCLING IN DEVIL'S LAKE, WISCONSIN (2006), *available at* http://www.epa.gov/owow/tmdl/mercury/pdf/devilslakefinalreport.pdf

deemed capable of accurately predicting, or tagging, wet deposition of individual mercury sources.[87] Based on the two studies, EPA now strongly recommends that states use REMSAD to integrate atmospheric loading into TMDL decisions.[88]

Calculating TMDLs based on atmospheric deposition is well established in many states and encouraged by the EPA. Across the country there are 8,890 mercury impaired waterbodies for which there have been 6,793 TMDLs created for mercury.[89] Of the 6,793 mercury based TMDLs, there are 74 TMDLs for mercury in fish tissue and four for methyl mercury.[90] Considering the common sources of mercury contamination, EPA provides policy and technical tools to assist in the development of mercury TMDLs in impaired waterbodies.[91] There are a number of examples of approved mercury TMDLs including the Northeast Regional mercury TMDL addressing mercury predominantly from air deposition sources,[92] the Minnesota statewide mercury TMDL,[93] and waterbody specific TMDLs in Cache Creek, Bear Creek, and

---

[87] *Id.*

[88] U.S. Envtl Protection Agency, *New Tools for Mercury TMDL Support, Basic Project Information*, http://www.epa.gov/owow/tmdl/techsupp.html (last visited Mar. 29, 2010).

[89] U.S. Envtl Protection Agency, *Watershed Assessment, Tracking & Environmental Results*, http://iaspub.epa.gov/waters10/attains_nation_cy.control?p_report_type=T#causes_303d (last visited Mar. 29, 2010).

[90] *Id.*

[91] U.S. Envtl Protection Agency, *Mercury, Impaired Waters and Total Daily Maximum Loads*, http://www.epa.gov/owow/tmdl/mercury/ (last visited Mar. 29, 2010).

[92] New Eng. Interstate Water Pollution Control Comm'n, *Water Quality, Mercury, Northeast Regional Mercury TMDL*, http://www.neiwpcc.org/mercury/MercuryTMDL.asp (last visited Mar. 29, 2010).

[93] Minn. Pollution Control Agency, Statewide Mercury Total Maximum Daily Load, http://proteus.pca.state.mn.us/water/tmdl/tmdl-mercuryplan.html (last visited Mar. 5, 2010); U.S. ENVTL PROTECTION AGENCY, FACT SHEET: MINNESOTA STATEWIDE MERCURY TMDL (2009), *available at* http://www.epa.gov/owow/tmdl/mercury/pdf/minnesota_factsheet.pdf.

Harley Gulch TMDL, CA,[94] Middle and Lower Savannah River Watersheds, Georgia[95] and Willamette Basin, OR.[96]

In 2004, the State of Minnesota determined that atmospheric deposition of mercury supplied more than 99.5% of the mercury levels in fish.[97] And although 90% of the mercury deposited in the state originates from outside the state, the Minnesota Pollution Control Agency prepared a statewide mercury TMDL.[98] This TMDL was approved by the EPA in March 2007.[99] Minnesota's statewide plan for a mercury TMDL classifies waterbodies divided by region and based on similarities in waterbody properties, land use, and fish tissue concentrations. The basis for 303(d) listing in Minnesota was "[h]igh mercury water column concentrations and fish mercury levels resulting in fish consumption advisory of [more than] one meal per week for any member of the population."[100] The TMDL target level was set in Minnesota based on EPA's

---

[94] U.S. ENVTL PROTECTION AGENCY, FACT SHEET: CACHE CREEK, BEAR CREEK, AND HARLEY GULCH, CA TMDL (2009), *available at* http://www.epa.gov/owow/tmdl/mercury/pdf/cachecreek_factsheet.pdf; CAL. ENVTL PROTECTION AGENCY, REG'L WATER QUALITY CONTROL BOARD, CENTRAL VALLEY REGION, CACHE CREEK, BEAR CREEK, AND HARLEY GULCH, TMDL FOR MERCURY (2004), *available at* http://www.swrcb.ca.gov/rwqcb5/water_issues/tmdl/central_valley_projects/cache_sulphur_creek/cache_nov2004_a.pdf.

[95] U.S. ENVTL PROTECTION AGENCY, REGION 4, TOTAL MAXIMUM DAILY LOAD FOR TOTAL MERCURY IN THE MIDDLE/LOWER SAVANNAH RIVER, GA (FEB. 28, 2001), *available at* http://www.epa.gov/owow/tmdl/examples/mercury/ga_savfinal.pdf; U.S. ENVTL PROTECTION AGENCY, ANALYSIS OF ATMOSPHERIC DEPOSITION OF MERCURY TO THE SAVANNAH RIVER WATERSHED (2001), *available at* http://www.epa.gov/owow/tmdl/examples/mercury/ga_savappa.pdf.

[96] U.S. ENVTL PROTECTION AGENCY, FACT SHEET: WILLAMETTE BASIN MERCURY TMDL (2009), *available at* http://www.epa.gov/owow/tmdl/mercury/pdf/willamette_factsheet.pdf.

[97] Minn. Pollution Control Agency, Statewide Mercury Total Maximum Daily Load, http://proteus.pca.state.mn.us/water/tmdl/tmdl-mercuryplan.html (last visited Mar. 5, 2010)

[98] MINN. POLLUTION CONTROL AGENCY, IMPLEMENTATION PLAN FOR MINNESOTA'S STATEWIDE MERCURY TOTAL MAXIMUM DAILY LOAD (2009), *available at* http://www.pca.state.mn.us/publications/wq-iw4-01p.pdf.

[99] *Id.*

recommended tissue residue criterion of 0.3 mg methylmercury/kg fish (the level in Minnesota was set to 0.2 mg/kg due to high fish consumption in the state).[101]

In the Cache Creek, Bear Creek, and Harley Gulch TMDL, California fish tissue targets were set based on the trophic level of fish and classified differently in each individual creek. Numeric targets are in the form of methylmercury concentrations in trophic level 3 and 4 fish consumed by raptors and humans. Target levels ranged from 0.05 mg/kg for trophic level 2 and 3 fish to 0.23 mg/kg for trophic level 4 fish.[102]

In Willamette Basin, OR, officials named a fish tissue criterion of 0.35 mg/kg for mercury and set their TMDL target to 0.92 ng/l of total Hg which was estimated to be the concentration that was required to bring the Northern pikeminnow tissue concentration to 0.3mg/kg, as calculated using the Food Web Biomagnification Model.[103] The Oregon Department of Environmental Quality which developed the mercury TMDL for the Willamette Basin is a member of the Quicksilver Caucus, an interstate partnership that works to develop approaches for reducing the amount of mercury in the environment.[104]

---

[100] U.S. ENVTL PROTECTION AGENCY, FACT SHEET: MINNESOTA STATEWIDE MERCURY TMDL (2009), *available at* http://www.epa.gov/owow/tmdl/mercury/pdf/minnesota_factsheet.pdf

[101] *See* U.S. ENVTL PROTECTION AGENCY, OFFICE OF WATER, OFFICE OF SCI. AND TECH., WATER QUALITY CRITERION FOR THE PROTECTION OF HUMAN HEALTH: METHYLMERCURY (2001), *available at* http://www.epa.gov/waterscience/criteria/methylmercury/pdf/mercury-criterion.pdf.

[102] U.S. ENVTL PROTECTION AGENCY, FACT SHEET: CACHE CREEK, BEAR CREEK, AND HARLEY GULCH, CA TMDL (2009), *available at* http://www.epa.gov/owow/tmdl/mercury/pdf/cachecreek_factsheet.pdf.

[103] U.S. ENVTL PROTECTION AGENCY, FACT SHEET: WILLAMETTE BASIN MERCURY TMDL (2009), *available at* http://www.epa.gov/owow/tmdl/mercury/pdf/willamette_factsheet.pdf.

[104] KEVIN MASTERSON, OREGON DEPT. OF ENVT'L QUALITY, 2007 OREGON MERCURY REDUCTION STRATEGY (2007), *available at* http://yosemite.epa.gov/r10/ECOCOMM.NSF/Columbia/TRWG/$FILE/CTRW-Mercury-Strategy-Presentation-Oct-07.pdf; U.S. ENVTL PROTECTION AGENCY, FACT SHEET: WILLAMETTE BASIN MERCURY TMDL (2009), *available at* http://www.epa.gov/owow/tmdl/mercury/pdf/willamette_factsheet.pdf.

In March 2007, EPA approved a 5m subcategory of the 303(d) list for waters impaired predominantly from mercury deposition. However, the 5m subcategory is only appropriate where a state has a comprehensive mercury reduction program in place.[105] Under the 5m approach, a state defer the development of TMDLs for waters impaired primarily from atmospheric sources. But because the 5m approach is limited to states with an active comprehensive mercury reduction program, EPA has also produced an accompanying checklist to assist states, EPA regional staff, and other stakeholders in identifying approaches for the development of mercury TMDLs.[106] It follows that for states without a comprehensive mercury reduction program, that those states are required to set a TMDL for impaired waters, even if the sources are primarily from atmospheric deposition.

The EPA checklist suggests that the TMDL should separate contributions from NPDES-permitted sources from the estimate of contributions from non-NPDES permitted sources.[107] And when determining wasteload allocations, the relative contribution of point sources compared to nonpoint sources may be considered.[108] "Where point sources are contributing a very small amount of the total mercury load, allocation proportional to their relative contribution is typical in approved mercury TMDLs."[109]

---

[105] U.S. Envtl Protection Agency, *Fact Sheet: Memorandum on Listing Waters Impaired by Atmospheric Mercury Under Clean Water Act Section 303(d): Voluntary Subcategory 5m*, Mar. 8, 2007, http://www.epa.gov/owow/tmdl/mercury5m/mercury5mfactsheet.html (last visited Mar. 5, 2010).

[106] U.S. ENVTL PROTECTION AGENCY, TMDLS WHERE MERCURY LOADINGS ARE PREDOMINANTLY FROM AIR DEPOSITION (2008), *available at* http://www.epa.gov/owow/tmdl/pdf/document_mercury_tmdl_elements.pdf.

[107] *Id.*

[108] *Id.*

[109] *Id. at* 12.

Aside from triggering the TMDL provision, the broader effect of a 303(d) listing on a permitting agency remains unclear. However, certain provisions in the Clean Water Act and in accompanying state acts contain more expansive prohibitions on all state actions that would degrade high quality waters.

c. Anti-degradation Policy

A 1987 amendment to the Clean Water Act makes clear that state-established water quality standards must include an anti-degradation policy, which is "a policy requiring that state standards be sufficient to maintain existing beneficial uses of navigable waters, preventing their further degradation."[110] The federal standards establish three levels of water quality protection: Tier I, Tier II, and Tier III.[111]

Tier I protection establishes minimum standards for all of a state's waters and requires that "[e]xisting instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected."[112] Tier II protection applies when "the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water."[113] And Tier III protection provides that "[w]here high quality waters constitute an outstanding National resource, such as waters of National and State parks

---

[110] PUD No. 1 of Jefferson County, 511 U.S. 700, 705 (1994).

[111] U.S. Envtl Protection Agency, *Water Quality Standards*, http://www.epa.gov/waterscience/standards/about/adeg.htm (last visited Mar. 29, 2010).

[112] 40 C.F.R. § 131.12(a)(1).

[113] 40 C.F.R. § 131.12(a)(2). Tier II protection may be limited if "the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic and social development in the area in which the waters are located." 40 C.F.R. § 131.12(a)(2).

and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected."[114]

The EPA's regulations implementing the Clean Water Act require that each state "develop and adopt a statewide anti-degradation policy and identify methods for implementing such policy."[115] Once a state adopts or revises its water quality standards, including its anti-degradation policy, the Clean Water Act requires the state to submit the standards to the EPA for review.[116] And if the standards and implementation procedures are consistent with the minimum federal standards required by the Clean Water Act and the EPA's implementing regulations, then the EPA must approve the state standards within sixty days.[117]

Whether impaired waters are also covered by the anti-degradation policy remains within the discretion of the state. The Sixth Circuit in Kentucky Waterways Alliance v. Johnson reasoned that EPA's approval of Kentucky's exclusion of impaired waters from Tier II protection was consistent with the requirements of 40 C.F.R. § 131.12(a) and was not arbitrary or capricious.[118] However, the court noted that "[a] careful reading of 33 U.S.C. § 1313(d) reveals that the section has nothing to do with identifying which water bodies should receive Tier II protection" and rejected the defendant Commonwealth of Kentucky's argument that impaired waters should never be afforded Tier II protection under the Clean Water Act.[119]

---

[114] 40 C.F.R. § 131.12(a)(3).

[115] 40 C.F.R. § 131.12(a).

[116] 33 U.S.C. § 1313(c)(1).

[117] 33 U.S.C. § 1313(c)(3).

[118] *See* Kentucky Waterways Alliance v. Johnson, 540 F.3d 466, 478 (6th Cir. 2008).

[119] *Id. at* 478.

In North Carolina, a permit issuing state environmental agency must ensure that no activity will lower water quality below the water quality level necessary to support existing or anticipated uses. [120] If a state agency knows that a facility will be constructed or operated in a manner which increases mercury loading in impaired waterways, the state agency may not take any action to permit the construction or operation of the facility. In fact, the anti-degradation provision in North Carolina Administrative Code explicitly provides that the state must proactively prevent the degradation of waterbodies for Tier II waterbodies. For example, this means that a state environmental agency must not issue an air permit to a coal-fired plant, if that permit would allow the release of toxic emissions that ultimately enter a waterbody and degrade the water quality below its designated uses.

The extent of the prohibition could, however, be limited by a state's implementation of the federal anti-degradation policy. If a waterbody is listed as impaired, the prohibitive action provision is not necessarily triggered, as was upheld in *Kentucky Waterways*. In most states, the mandatory provision only prohibits actions which would cause the water quality of a waterbody to degrade below its designated or anticipated uses; it is uncertain whether waterbodies that are already impaired below their designated uses would receive Tier II protection, though from *Kentucky Waterways* it reasons that states must at a minimum explicitly exempt impaired waters from protection. Nevertheless, it is clear that the Clean Water Act sets the minimum standard for

[120] *See* 15A N.C.A.C. 02B .0201(c) ("The Commission shall consider the present and anticipated usage of waters with quality higher than the standards, including any uses not specified by the assigned classification (such as outstanding national resource waters or waters of exceptional water quality) and shall not allow degradation of the quality of waters with quality higher than the standards below the water quality necessary to maintain existing and anticipated uses of those waters.").

states in setting an anti-degradation policy and states could implement broader prohibitions on activities which would further degrade an impaired waterbody.[121]

C. National Environmental Policy Act

Even if a state does not prohibit all actions that would negatively impact a waterbody, the National Environmental Policy Act ("NEPA") contains provisions that require agencies to identify, evaluate and disclose any significant adverse impacts to the "human environment" when issuing any permit. NEPA requires that federal agencies file environmental impact statements ("EISs") for all major federal actions significantly affecting the human environment. Many federal agencies have supplemented the NEPA provisions with preliminary processes, such as environmental assessment procedures that are prepared in preparation of an EIS. If the agency decides not to prepare an EIS, it must make a "finding of no significant impact" ("FONSI") available to the public. The finding is then subject to judicial review under the *Chevron*[122] doctrine.

The first step in the preparation of an EIS is called "scoping." Scoping allows the agency to (a) obtain early preparation by other agencies and the public in planning the EIS; (b) determine the scope of the EIS; and (c) determine the significant issues to be discussed in the EIS.[123] This includes an analysis of the impacts, both direct and as the result of cumulative and reasonably foreseeable future action (even if those actions are not under the control of the

---

[121] *See* Pud No. 1 v. Wash. Dep't of Ecology, 511 U.S. 700, 705 (U.S. 1994) ("The Act also allows States to impose more stringent water quality controls. *See* 33 U.S.C. §§ 1311(b)(1)(C), 1370. *See also* 40 CFR § 131.4(a) (1993) ('As recognized by section 510 of the Clean Water Act[, 33 U.S.C. § 1370], States may develop water quality standards more stringent than required by this regulation').").

[122] Chevron USA v. Natural Resources Defense Council, 467 U.S. 837 (1984).

[123] 40 C.F.R. § 1501.7(a).

agency), to cultural and historic resources, human health and safety, and recreational, aesthetic and economic values of a region.

Although purely procedural, NEPA is a useful tool for environmental groups to challenge an agency's discretion. It can broaden the scope of impact to include human and perhaps socio-economic harm caused by environmental damage or it can be used to close the gap between regulating agencies. For states that have separate air and water divisions acting under the auspices of a state environmental agency, the individual divisions may attempt to avoid expansive studies that are more appropriately a water or air matter. However, citizen groups may participate in the scoping process of an environmental review document and petition the agency to consider *all* environmental effects that are reasonably foreseeable. In the case of atmospheric deposition, scientific modeling shows that the burning of coal does in fact lead to increased mercury loading in the surrounding environment.

IV. Conclusion

Mercury is a volatile chemical—released into the air through coal combustion but is most potent in an aquatic ecosystem. Scientific studies illustrate that in its immediate state, inorganic mercury is an active pollutant that transforms into methylmercury and migrates through foodwebs and generations, inflicting serious health effects on each species host. And as a transformative chemical, an inflexible regulatory structure seems unable to capture mercury before it makes its way into the human system. Specifically, EPA's missing regulation of hazardous air pollutants under the Clean Air Act leaves open the question of atmospheric mercury emissions. Secondly, the point source/non-point source distinction under the Clean Water Act when strictly construed could remove federal jurisdiction from a national problem. And finally, the failure of states to implement a TMDL for mercury impaired waterbodies leaves

interstate waters in a state of impairment and degradation. This paper argues that despite the regulatory gaps highlighted by mercury, a number of strategies are available to environmental litigants, seeking alternatives to inaction or agency delays. In consideration of the object and purpose of the nation's environmental acts, litigation can, at the very least, tell the story of the true costs of a lump of coal.