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EPA's Proposed Policy on Wastewater Blending: Background and Issues

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Summary

In November 2003 the Environmental Protection Agency (EPA) proposed a policy concerning a wastewater treatment practice called blending. The policy was intended to clarify when the practice can be allowed and still adhere to Clean Water Act regulations and requirements. Some cities use blending to manage peak flows of water and waste into wastewater treatment plants during and after storms as a way to prevent conditions that otherwise result in raw sewage backups into homes and other buildings or overflows into nearby waters. Blending involves routing excess wastewater around the plant's biological treatment processes and recombining this excess flow with fully treated wastewater before discharging it to a stream or lake.

Although blending has been standard engineering practice for several decades as a way to manage peak stormwater flows, controversy exists about the practice, both among stakeholder groups and also internally at EPA, where enforcement officials have challenged the practice and in some cases opposed allowing cities to use it. Others at EPA believe that, with certain restrictions, the practice is legal and environmentally protective. Controversies and uncertainties led EPA to announce on May 19, 2005, that it will not finalize the policy that it proposed in 2003.

This report provides background on blending, why and how it is practiced, the proposed policy that EPA now says it will not finalize, associated issues, and congressional interest in the topic. It will be updated as warranted.

Criticism of blending focuses on three concerns: legality of the practice, impacts on public health and the environment, and other policy issues. A number of groups and interests weighed in on all of these issues, especially in comments on the November 2003 proposed policy. Environmental advocates say that the practice of blending is inconsistent with existing rules that prohibit intentional bypass of a treatment facility. These groups have also raised substantial concern about public health and environmental impacts from discharges of wastes that contain pathogenic organisms. Many cities and municipal organizations supported the EPA policy and practice of blending, saying that if cities are barred from blending, they are forced to make costly infrastructure investments, with limited benefit. While a number of states supported the EPA policy, others opposed it for reasons including concern that the policy would undermine incentives for cities to remedy the infrastructure problems that result in sewage overflows.

In Congress, these issues have drawn some attention. In January 2004, Members with differing views wrote to EPA to express concerns about the proposed policy. A House subcommittee held a hearing on the topic in April 2005. Legislation intended to bar EPA from issuing blending rules or guidance has been introduced in the 109th Congress (H.R. 1126). Also, in acting on FY2006 appropriations for EPA (H.R. 2361), the House adopted an amendment prohibiting EPA from using funds to finalize or implement the 2003 proposed blending policy.

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Introduction

In November 2003, the Environmental Protection Agency (EPA) issued a proposed policy concerning a wastewater treatment practice called blending. It is a type of operational practice that is used to prevent conditions that result in sewage backups into homes and other buildings, or overflows of untreated waste into nearby waters. The proposal was intended to clarify when the practice can be allowed and still adhere to Clean Water Act regulations and requirements. Blending has been used for several decades to manage peak flows of water and waste into wastewater treatment plants during storms, but it recently has become controversial. The practice involves routing excess wastewater from domestic, commercial and industrial sources around the plant's biological treatment processes and recombining this excess flow with fully treated wastewater before discharging it to a stream or lake (see Figure 1, on page 7). On May 19, 2005, after reviewing nearly 100,000 public comments on the proposal — many favoring it, but many others opposing it — EPA announced that it would not finalize the 2003 proposal and will continue to work on alternatives.

This report provides background on blending, why and how it is practiced, EPA's proposed policy, associated issues, and congressional interest in the topic. Controversy exists about whether the practice is lawful under water quality regulations, whether it is harmful to human health or the environment, and whether it is good from a policy perspective. Supporters of the proposed policy, including many cities, municipal organizations and some states, say that if blending is restricted or prohibited, cities will be forced to spend limited public resources on costly water infrastructure improvements that are used infrequently. Such critics as environmental advocates and other states say that blending allows treatment plants to discharge wastewater that could contain harmful pathogenic microorganisms. Many critics also said that EPA's proposed policy would have allowed treatment plants to blend even when other more environmentally protective technological options are available. A key issue was whether the policy would have clarified EPA regulations to allow the safe use of blending by cities, as EPA intended, or would have fostered wider use of wastewater management practices that critics believe will harm public health and the environment.

The particular issues concerning blending also arise in the broader context of policymakers' efforts to control pollution associated with wet weather discharges that happen only during and after major precipitation events. EPA believes that these sources, including combined sewer overflow discharges, stormwater, separate sanitary sewer overflows, and nonpoint source runoff, are the leading cause of water

quality impairment in the United States.[1] The nation's initial efforts to control water pollution focused on conventional point sources from municipal, commercial, and industrial wastewater treatment plants that are typically characterized by predictable flows and identifiable discharge points. Since the mid-1980s, policymakers have turned attention to other, non-traditional wet weather pollution sources that are more difficult to control because the sources are numerous and geographically dispersed, and waste flows are intermittent and largely unpredictable. Managing these diverse sources presents major policy and technological challenges.

Background

Wastewater Treatment Processes

In the United States, wastewater is discharged from sources such as homes or industrial plants and is transported via collection systems consisting of sewers and pumping facilities to a wastewater treatment facility. The wastewater components of major concern are organic and inorganic materials that will deplete the oxygen resources of the stream or lake to which they are discharged, those which may stimulate undesirable growth of plants or organics (such as algae) in the receiving water, or those with potential undesirable aesthetic effects or adverse health effects on downstream water uses. Another important wastewater treatment concern is removal of pathogenic bacteria and viruses that can cause disease.

Treatment plants generally work in two stages. Primary treatment mechanically separates the coarser solids from the water, generally by screening and settling, typically removing about 60% of solids and 35% of BOD from the untreated waste.[2] The core element of wastewater treatment, called secondary treatment, follows primary treatment; it typically involves biological processes. The biologic process most often used today is the activated sludge process, which utilizes microorganisms in an aerobic environment to remove a majority of the primary pollutants found in wastewater. The microorganisms (bacteria and protozoa) use the remaining nutrients and organic material in the wastewater as their food supply. Although secondary treatment may remove more than 85% of the remaining BOD and suspended solids, it fails to remove significant amounts of nitrogen, phosphorus, or heavy metals, nor does it completely remove pathogenic bacteria and viruses. If further treatment such as nutrient removal is required to meet water quality standards, tertiary biologic or chemical treatment processes can be used. Following secondary or tertiary treatment,

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[1] U.S. Environmental Protection Agency. *National Water Quality Inventory, 2000 Report*. EPA-841-R-02-001. August 2002. P. ES-3.

[2] BOD, or biochemical oxygen demand, is a measure of the oxygen-consuming organic matter and ammonia-nitrogen in wastewater and is used to determine how well a treatment plant is working. The higher the BOD loading, the greater the resulting depletion of oxygen in the waterway. The ability of a body of water to support life depends mainly on maintaining a certain amount of dissolved oxygen (DO) because, for example, DO is what fish breathe. Thus, federal regulations (and facility-specific permits that implement those rules) specify maximum amounts of BOD that wastewater treatment plants may discharge, as measured by the oxygen consumed in a stated period of time, usually five days (BOD_5).

the final effluent generally is disinfected before it is released to a receiving water, most commonly by chlorination, ultraviolet irradiation, or ozonation.

Federal Law and Regulations

The 1972 Federal Water Pollution Control Act Amendments (P.L. 92-500, commonly referred to as the Clean Water Act, or CWA) established a framework for upgrading the nation's wastewater infrastructure as one key element in the act's wide-ranging objective to restore the quality of the nation's waters. The CWA established a minimum pollution control standard for municipal wastewater infrastructure, applicable nationwide, based on the application of secondary treatment. It mandated application of more stringent treatment standards and pollution control technology where necessary to protect local water quality and established a permit program to ensure implementation of standards.

These requirements are implemented through regulations promulgated by the EPA that define minimum levels of effluent quality for publicly owned treatment works (POTWs) prior to discharge. The requirements of the secondary treatment regulations are expressed as concentration limitations (seven-day and 30-day average effluent concentration limits for total suspended solids (SS) and BOD_5), percentage removal requirements for both SS and BOD_5, as well as a limitation on pH. For most types of POTWs, the federal regulations establish a 30-day average percentage removal requirement of 85% for SS and BOD_5. The percent removal requirements were established to achieve two basic objectives, according to EPA: (1) to encourage cities to correct excessive infiltration and inflow I/I problems in their sanitary sewer systems,[3] and (2) to help prevent intentional dilution of influent wastewater as a means of meeting permit limits.[4]

EPA regulations also define standard permit conditions to be included in all Clean Water Act discharge permits. One of those standard conditions addresses "bypasses," which are defined as "the intentional diversion of waste streams from any portion of a treatment facility" (40 CFR §122.41(m)). Under these rules, a bypass is prohibited unless: it is unavoidable to prevent loss of life, injury, or severe property damage; there are no feasible alternatives, such as use of auxiliary treatment or backup facilities or retention of untreated wastes; and proper notice is provided to the appropriate permitting authority. The bypass cannot cause effluent limitations to be exceeded.

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[3] Infiltration occurs from too much rainfall or snowmelt percolating through the ground into leaky sewers which are not intended to collect rainfall or to drain property. Infiltration can also occur as a result of groundwater seeping directly into leaky sewers. Excess water can also inflow through roof drains connected to sewers and broken or badly connected sewer service lines.

[4] 68 *Federal Register* 216, Nov. 7, 2003, p. 63047.

Wet Weather Pollution Problems

The collection system that conveys wastewater to the treatment plant is a key element of the overall wastewater infrastructure system. Collection systems are either combined sewer systems, which are designed to carry domestic and industrial sanitary waste plus rainwater; or separate sanitary sewer systems, designed to collect only domestic and industrial sanitary waste.[5] Treatment plants and collection systems are designed to handle the flows up to certain volumes under routine or predictable operating conditions. A more difficult challenge is that of managing flows that occur under peak flow conditions, during what is referred to as "wet weather" events (rainfall, as well as snowmelt).

Extreme wet weather events can introduce larger volumes of water and waste than the plant and collection system can adequately manage, resulting in collection system overflows and backups of sewage into buildings, and water quality problems from discharges of inadequately treated waste. During storm events, both combined and separate sewer systems can experience overflows when the capacity of a sewer is exceeded as a result of blockages, bottlenecks and/or undersized pipes. The discharge of untreated or partially treated sewage contains pathogenic organisms that represent a health risk and also may contain toxic and/or oxygen-demanding pollutants. Infiltration/inflow of rainwater into sewers is believed to be the primary factor causing peak flows in sewers, especially separate sanitary sewers. Aging infrastructure and associated maintenance challenges can also lead to excess water in sanitary sewer systems. High levels of I/I that reach the treatment plant increase the hydraulic load on the plant, which can reduce treatment efficiency, exceed the capacity of components within the plant, and in extreme situations make biological treatment facilities inoperable. Treatment plant operators use a combination of strategies to manage these peak flows, including implementing operation and maintenance programs, enlarging pipes, adding or increasing storage capacity, building additional treatment facilities, or using alternative treatment techniques to move peak flows through the treatment.

Operators of treatment plants and collection systems have long faced these challenges, and for the last 15 years or so, policymakers have been addressing various wet weather pollution issues, including developing strategies to reduce overflows and backups, as well as establishing appropriate regulatory and enforcement policies.

By definition, sewer overflows are unauthorized discharge points that violate the Clean Water Act's prohibition on discharges that are not in compliance with the limitations and conditions of a discharge permit issued pursuant to the CWA. Nevertheless, municipal officials and sanitary engineers say that it is practically impossible to design a system that will never overflow. Even under the best of conditions, engineers say, natural disasters and even pipe failures will lead to

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[5] Combined sewer systems are remnants of the nation's early infrastructure and are found in about 900 communities, primarily in older cities in the Northeast, Great Lakes region, and the Pacific Northwest. Most combined sewer systems were constructed before 1900 when the necessity for separate wastewater treatment was not readily apparent.

unavoidable releases of sewage. However, chronic overflows result from inadequate system maintenance and deterioration, not unavoidable circumstances.

Recognizing the view that sewer overflows are unavoidable, at least to a degree, some permitting authorities have issued Clean Water Act permits to POTWs allowing overflow discharges — despite the statutory prohibition on discharges that do not meet secondary treatment requirements. For example, some permits authorize overflows when they are not feasible to avoid, such as circumstances beyond the control of the system operator. In rare cases, other permits may allow discharges at specified locations, when specific permit requirements are met, such as meeting effluent limitations, monitoring, and reporting. However, in other cases, state and federal enforcement officials have held to the view that overflow discharges are inconsistent with the Clean Water Act and have brought actions against municipalities for overflows from combined and separate sewers, thus raising questions about the clarity of EPA regulations and consistency of enforcement.

Administrative Actions: CSO and SSO Policies

In part because of perceptions of inconsistent policy and rules, in 1994, after lengthy consultations with stakeholder groups, EPA issued a national strategy on controlling overflows from combined sewers (CSOs). Designed to reduce CSO discharges that often contain high levels of organic and toxic wastes, it outlined conditions under which combined sewer systems that overflow as a result of wet weather events may be authorized through permits or other enforceable mechanisms, including a requirement that systems adopt nine minimum controls and long-term control plans.

Soon after issuance of the CSO policy, EPA and a group of stakeholders initiated discussions for development of similar national policy on controlling overflows from separate sanitary sewers (SSOs). The discussions about an SSO policy were based on certain principles: desire to clarify a general prohibition on overflows; to establish stringent but feasible standards and require specific actions that would help eliminate avoidable overflows; and to define circumstances for enforcement against unavoidable overflows.[6] EPA officials and stakeholders were unable to reach consensus on SSO policy issues, and eventually EPA decided to move ahead with regulations to control SSO discharges. The Clinton Administration approved an SSO rule proposal late in 2000. The proposal was not published in the *Federal Register* before Inauguration Day in January 2001, and the incoming Bush Administration suspended it for review. However, it was widely circulated and was available to the public for some time on EPA's website.

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[6] Combined sewer systems are, in fact, designed to discharge excess wastewater directly into surface waters, when the capacity of the sewer system is exceeded during heavy rainfall or snowmelt. In regulating CSOs, the key concern is first to eliminate overflows during dry weather conditions and then to minimize impacts of storm-related discharges. The issues involving SSOs are somewhat different, because separate sanitary sewers are not designed to overflow. When storm sewer overflows occur, they usually are from undesigned outfall points. Prohibiting and eliminating all overflows to the extent feasible is key.

After several months of review, in November 2001 EPA officials announced the intention to propose the SSO rule developed by the Clinton Administration, but with revised preamble language. During the review EPA considered a number of options, including separate publication of noncontroversial parts of the Clinton proposal. Chief among the controversies raised was whether EPA would open discussion of alternatives to prohibiting SSOs or would retain the policy detailed in the Clinton rule calling for strict enforcement against any overflows, regardless of fault. It appears that these and other controversies persist, because as of May 2005, EPA has not proposed or published an SSO control regulation.

During the SSO rule review, EPA staff also began working on draft guidance on other wet weather peak flow management issues that was envisioned as separate from but related to the SSO rule. In December 2001, EPA circulated among stakeholders a draft guidance document addressing permit requirements and enforcement procedures applicable under existing rules to three specific wet weather situations. One of the three addressed the use of alternative peak flow treatment schemes at the POTW (in contrast, for example, to procedures governing discharges from emergency overflow structures located outside the boundary of a treatment plant) — a practice generally referred to as "blending." The December 2001 draft was never formally proposed or finalized (although it was circulated to states, EPA regional offices, and multiple other stakeholders). It evolved into a single proposal published by EPA in November 2003 that focused only on blending.[7]

What Is Blending?

Blending is a wastewater flow operational technique used by some treatment plants during and after storm events. In order to manage high flows in the collection system at such times, a POTW operator modifies the flow of wastewater through the treatment plant. During blending, primary treatment is provided for all flows coming into the facility, and secondary treatment is provided for flows up to the capacity of the secondary biological treatment units. The latter typically are designed with less capacity than primary treatment units, which can handle significant variations in flow and concentration of pollutants, while the microorganisms in biological units are more sensitive and can be negatively affected by such changes. The excess flows are diverted around the secondary biological treatment units and then recombined, or blended, with flows that have been treated by the secondary units. The blended effluent is usually disinfected prior to discharge to a lake, stream, or coastal waterbody — particularly if the discharge will affect bathing or fishing waters. Figure 1 illustrates the process.[8]

Sanitary engineers and municipal officials say that blending is necessary because if surges of excess flow from storm events enter the secondary treatment units, they

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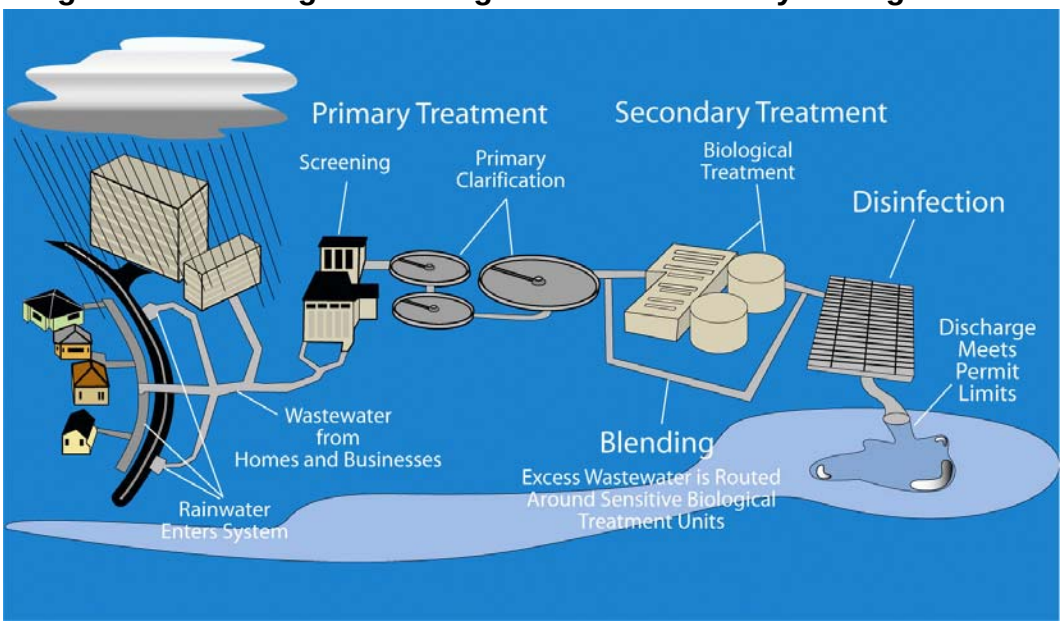
[7] U.S. Environmental Protection Agency. "National Pollutant Discharge Elimination System (NPDES) Permit Requirements for Municipal Wastewater Treatment Discharges During Wet Weather Conditions." 68 *Federal Register* 216, Nov. 7, 2003, pp. 63042-63052.

[8] A typical sewage treatment system schematic showing flows during non-storm conditions would look the same as Figure 1 but would not show part of the flow being diverted around secondary treatment units.

will wash out the bacteria which comprise the biological processes used during secondary treatment. These bacteria are less tolerant of variations in flow volumes and strength (i.e., more rainwater and more dilute/less sewage) than are systems used in primary treatment units. If the bacteria are washed out, it can take weeks or months for a biological treatment unit to recover by re-generating the necessary microorganisms; in the mean time, excess pollutants may be discharged to the environment. POTW officials say that it is not possible to build treatment plants to a capacity where they could treat 100% of all wastewater during peak flows, because during the more common dry periods, the biological component of the treatment process would essentially starve to death.

Figure 1. Blending at a Sewage Treatment Facility During a Storm



Source: CRS.

As noted above, POTWs have a number of technological options for managing peak wet weather flows beyond the boundary of the facility, ranging from correcting infiltration and inflow in order to reduce the hydraulic load in the sewer system, to constructing equalizing basins or storage tanks to hold rainwater off-line until flows can be routed to the treatment plant. Milwaukee and Chicago, for example, have built elaborate underground tunnel systems to temporarily hold peak flows. Some cities also are investigating or constructing new or innovative technologies. One of these is a high-rate clarification process with rapid settling of solids from the waste, which both provides some initial treatment and reduces the volume of waste material. Other technological options involve constructing secondary-equivalent treatment units based on physical/chemical, not biological, processes, which can be started up quickly and can sit idle between storm events. Depending on land availability, some of these technologies may be used on-site at the POTW. Others are utilized remotely

and can provide sufficient treatment to comply with EPA's secondary treatment discharge limits for suspended solids and BOD_5.[9]

Treatment plant operators view blending as another technological option, one that is preferable to overflow discharges of untreated waste or sewage backups in basements. In 2002, the Association of Metropolitan Sewerage Agencies, representing many of the nation's large POTWs, conducted a survey on wet weather management. Thirty percent (78) of AMSA's members responded, and 37 respondents (47%) said they do blend during wet weather conditions, generally only a few times per year. Of 41 who do not currently blend, 24 (58%) said that blending would enable the POTW to meet permit limits all or a majority of the time.[10] Proponents of blending argue that, if blending is restricted, municipalities are forced to spend public resources to build structures with limited public benefit, because of their infrequent use during occasional storm events. While EPA has not estimated the national cost of providing sufficient treatment to preclude blending, it has estimated that the cost of correcting sanitary sewer overflow occurrences nationwide — a rough surrogate — is $88.5 billion.[11] Groups representing municipalities believe that the cost is likely to be higher, perhaps from $200 to $300 billion.

EPA's Blending Policy

Blending has been standard engineering practice since the 1970s, engineers say, as a way to manage peak flows during storm events to prevent conditions that result in backups into homes and other buildings or overflows of untreated waste into nearby waters. Nevertheless, controversy exists about the practice, both among stakeholder groups and also between several of EPA's regional offices and some at EPA Headquarters. EPA's Office of Water has generally supported the practice, but the Office of Enforcement and Compliance Assistance (OECA) has challenged it. Officials in OECA have argued that, without certain restrictions, the practice of blending is not enforceable. With appropriate restrictions, they say, permits authorizing blending are possible, but crafting permits to do so is complex and confusing. Others in EPA believe it is possible to write permits that lawfully allow for blending, and the policy that EPA proposed in November 2003 was intended to clarify how existing Clean Water Act regulations and permit requirements apply to wet weather blending scenarios.

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[9] It is more problematic for these alternative technologies to achieve the percentage removal requirement of EPA's secondary treatment rules, because wastes are more diluted in higher volume wet weather flows than in normal dry weather flows.

[10] Association of Metropolitan Sewerage Agencies. "AMSA Wet Weather Survey, Final Report." May 2003. 37 p. Available at [http://www.amsa-cleanwater.org/advocacy/wwsurvey/WetWeatherFinalReport.pdf]

[11] U.S. Environmental Protection Agency. *Clean Watersheds Needs Survey 2000, Report to Congress*. EPA-832-R-03-001, August 2003, pp. 4-1 - 4-3.

The proposed policy set forth six criteria for managing peak flows, including blended discharges:

- The final blended discharge must meet effluent limitations based on the secondary treatment regulation, including applicable percentage removal requirements, or any more stringent limits necessary to attain water quality standards.
- The facility's permit application must specify the treatment scenario that would be used for peak flow management.
- All flow must receive at least the equivalent of primary clarification.
- Peak flow treatment should be operated as designed and only be used when flows exceed the capacity of storage units and biological treatment units.
- The facility's discharge permit must require sufficient monitoring to ensure compliance with applicable Clean Water Act requirements.
- The permit also must require that the permittee's collection system be properly operated and maintained.

In addition, the policy stated that, where physically possible and economically achievable, blended effluent should not be discharged to sensitive receiving waters, such as beaches, public drinking water intakes, waters with threatened or endangered species, or designated Outstanding National Resource Waters and National Marine Sanctuaries. EPA's proposed policy assumed that if blending is done under the limited terms of the policy, the practice would be fully protective of human health and the environment.

Issues with Respect to Blending

Criticism of blending encompasses three areas: legality of the practice, impacts on public health and the environment, and other policy concerns.

As discussed below, a number of groups and interests have weighed in on these issues, especially in comments on the November 2003 proposed policy. Environmental advocates oppose the practice on legal grounds, and they and public health professionals have raised substantial concern based on public health and environmental issues. Proponents include many cities and municipal and local government organizations, including the National League of Cities, National Association of Counties, and Association of Metropolitan Sewerage Agencies (AMSA). Among states, views differ. Several states supported EPA's proposed policy, others supported it with additional restrictions or clarification (such as barring blended discharges into impaired waters where water quality standards have not yet been attained), and others opposed the practice based on a variety of policy concerns. In some instances, individual cities commented in support of the policy, but agencies of these cites' home states opposed it (for example, the Miami-Dade Water and Sewer Department supported it, while the Water Resources Management Division of Florida's Department of Environmental Protection opposed it).

Legality

The focus of legal concerns over blending rests on whether the practice is inconsistent with EPA's existing "bypass" regulation which prohibits "intentional diversion of waste streams from any portion of a treatment facility" and requires a determination that "no feasible alternatives" to the bypass exist, including installation of adequate backup facilities (40 CFR §122.41(m)). Critics argue that these provisions preclude blending and mandate that POTWs provide larger plant capacities, including temporary storage, so that all influent flows enter every treatment process unit. Since secondary treatment units are clearly part of the treatment unit, according to this view, blending violates the bypass rule's prohibition of intentional diversion. A bypass is allowed under EPA regulations when it is unavoidable, but critics say that the proposed blending policy would have allowed it as more routine practice. In the November 2003 proposed policy and guidance, EPA interpreted the bypass rule to allow for blending that complies with the criteria spelled out in the policy. Proponents of blending argue that, as long as the system is operated as designed, and the planned operational regime is disclosed to the permitting authority, it fully complies with the bypass regulation.

Concern over the legality of blending is the basis of actions brought by EPA enforcement officials in several regions — especially Region III (Philadelphia), Region IV (Atlanta) and Region VI (Kansas City) — challenging Clean Water Act permits proposed by state permitting authorities that would allow for blending.[12] These EPA regions, supported by states and environmental advocates, have declined to authorize blending in discharge permits because they believe the practice violates Clean Water Act rules mandating that all wastewater meet secondary treatment standards. Some other EPA regions have not prohibited or limited blending in POTW permits and have generally agreed with supporters of the practice that permits could, under certain circumstances, authorize re-routing or recombination of waste without being considered a bypass. For example, supporters say, if analysis of feasible alternatives has been done and permitting authorities have been notified, blending does not constitute a bypass. In 2002, a group of cities from Pennsylvania, Tennessee, and Arkansas and AMSA brought legal action against EPA, alleging that the prohibition on blending exercised by some EPA regions is not evenly applied among its regional offices and is not supported by any national regulation. The lawsuit was dismissed by a federal district court in November 2003, the court saying that it lacked subject matter jurisdiction over regional guidance documents that do not constitute final agency action by EPA Headquarters (*Pennsylvania Municipal Authorities Association v. Horinko*, D.D.C., No. Civ. 02-01361, Nov. 20, 2003). An appeal of the case is pending in the U.S. Court of Appeals for the District of Columbia Circuit.

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[12] The Clean Water Act allows EPA to delegate permitting responsibility to qualified states, and EPA has done so for 45 states and one territory. EPA issues permits in the remaining states and territories. However, even after delegation, EPA retains oversight to ensure that state-issued permits comply with the CWA's requirements. If EPA objects in writing to a permit, the permit may not be issued (§402(d)(2)).

Some EPA enforcement officials reportedly were concerned that issuance of a national policy would allow POTW operators to reopen consent decrees that now prohibit blending among other wet weather management controls. Alternatively, some were said to be concerned that POTWs could potentially sue EPA under the Federal Tort Claims Act to receive compensation for having installed costly pollution controls, or that they might petition EPA and states to revise their discharge permits.

Public Health and Environmental Impacts

The largest area of disagreement about blending rests on the issue of public health and environmental impacts. Supporters of the practice contend that, so long as the ultimate discharge from a POTW complies with EPA's secondary treatment rule or more stringent local water quality limits — as the proposed policy would have required — public health and the environment are adequately protected.

Disease-causing pathogens, including bacteria, parasites and viruses, can be found in domestic sewage, and may cause both chronic and acute illnesses, ranging from cholera, gastroenteritis, infectious hepatitis, and shigellosis to respiratory and skin infections. Outbreaks of waterborne diseases are associated both with exposures to contaminated drinking water supplies (resulting from inadequate treatment, disrupted treatment processes, or cross-contamination of wastewater and water supplies lines) and exposure to contaminated recreational waters. According to surveillance data compiled by EPA and the Centers for Disease Control and Prevention (CDC), states report, on average, approximately 20 such outbreaks per year linked to drinking water supplies and 30 per year linked to recreational water exposure, in total causing illness in several thousand persons annually. Since 1989, the number of gastroenteritis-related outbreaks involving recreational waters has been gradually increasing.[13] The concern of public health and environmental advocates about blending and other peak flow management issues is whether effluent containing pathogens is being adequately treated prior to discharge.

EPA's secondary treatment rules do not specifically limit pathogens. While primary wastewater treatment processes may remove about one-half of the suspended solids and BOD from raw wastewater, these processes are not effective in removing microbial pollutants. Secondary treatment removes about 85% of the organic matter in sewage and is considerably more effective at removing microorganisms — including up to 99% of viruses, which are known to cause a significant percentage of all gastrointestinal illnesses, and 99% of bacteria and parasites.[14] Two Canadian studies reported that primary wastewater treatment removes on average 76% and 27%, respectively, of *Cryptosporidium* and *Giardia lambia*, parasites associated with

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[13] Lee, Sherline H., Deborah A. Levy, Gunther F. Craun, Michael J. Beech, Rebecca L. Calderon. "Surveillance of Waterborne-Disease Outbreaks — United States, 1999-2000.": Nov. 22, 2002/(appears in Morbidity and Mortality Weekly Report) 51 (SS08);1-28.; online at [http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5108a1.htm].

[14] U.S. Environmental Protection Agency. Office of Research and Development. *Design Manual: Municipal Wastewater Disinfection.* EPA/625/1-86-021, 1986, Table 2-3, p. 6.

waterborne illness in the United States, and that secondary treatment was needed to achieve 90% or greater reduction of both.[15]

When primary treatment alone is provided, very high doses of chlorine are required to remove viruses or parasites. Moreover, when extra doses of chlorine are needed to disinfect the primary-treated waste, the chlorine combines with certain organic matter in the wastewater, creating compounds such as trihalomethanes, which are hazardous chemicals. These disinfection by-products are carcinogenic and may increase risk of cancer to humans, thus creating a secondary set of health hazards.

Supporters of blending respond to the arguments about public health impacts by acknowledging that primary treatment alone does not remove all pathogens, but also by pointing to the paucity of data to actually link human health impacts to discharges of raw or partially treated sewage. For example, to understand the relative magnitude of major sources to water contamination, a project by the Water Environment Research Federation studied occurrence of the parasite *Cryptosporidium* in two Wisconsin watersheds and found that contributions of *Crypto* oocysts from POTW effluents were nearly insignificant compared with contributions from other sources, especially wastes in uncontrolled runoff from farm lands and urban/suburban lands.[16]

While supporters and critics disagree on a number of issues, they are in broad agreement on one point: more monitoring and investigation are needed to determine the frequency of sewer overflows and assess the number of people made ill from waterborne diseases related to such discharges. Data on the incidence of waterborne diseases in the United States (and other impacts, such as closing of beaches and shellfish beds) frequently are unable to pinpoint the source or sources of contaminating agents. Both environmental advocates and groups representing POTW operators want more study of the possible health problems — the latter saying that, if there are only limited scientific studies documenting a problem, it is unwise for the nation to spend scarce public resources to address it. Environmental advocates say that the lack of data linking wastewater discharges to waterborne illnesses does not mean that the connection does not exist — the problem is in quantifying the health risk.

These questions were partly addressed in an August 2004 EPA report to Congress that was mandated by the Wet Weather Water Quality Act of 2000 (P.L. 106-554) concerning human health and environmental impacts of CSOs and SSOs. In that report, EPA said that there is an absence of direct cause-and-effect data relating the occurrence of CSO and SSO discharges to specific human health impacts, due to factors such as under-reporting of waterborne illness and the presence of pollutants from other sources. But, based on data from a subset of the nation's swimming areas, EPA estimated that between 3,448 and 5,576 illnesses occur

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[15] Katonak, Rachel and Joan B. Rose. "Public Health Risks Associated with Wastewater Blending." Department of Fisheries and Wildlife, Michigan State University, Final report, Nov. 17, 2003, pp. 22-23.

[16] Water Environment Research Foundation. *Sources and Variability of Cryptosporidium in the Milwaukee River Watershed*. Stock no. 99HHE2. 2003. 132 p.

annually in people exposed to waters contaminated with bacteria and viruses from sewer overflows. That estimate, the report said, captures only a portion of the likely number of annual illnesses attributable to CSO and SSO contamination of recreational waters.[17] Uncertainty about public health impacts was a key factor that affected finalization of EPA's proposed policy, as critics contended that the bypass of secondary treatment in a blending scenario may not adequately protect human health and that current monitoring strategies do not accurately assess the amount of harmful bacteria present in surface water after blending.

Water Quality Criteria for Bacteria. In the *Federal Register* Notice announcing the proposed blending policy, EPA said that it encourages states to adopt protective water quality criteria for bacteria in their water quality standards, since standards based on scientifically sound methods are needed as indicators for determining the human health risk from pathogenic microorganisms in waste discharges.[18] The likelihood of states doing so voluntarily is uncertain, however.

EPA publishes water quality criteria which consist of scientific information on the concentrations of specific constituents in water which protect aquatic life or human health. The issue concerning water quality criteria for bacteria stems from the fact that, in the early years following enactment of the 1972 Clean Water Act, EPA's recommended water quality criteria were based on specific levels of fecal coliform to be used as the indicator organism to protect bathers from gastrointestinal illness in recreational waters, and consequently most state-adopted water quality standards have been based on that indicator since the 1970s. In 1986, EPA recommended that states adopt criteria based on *Escherichia coli* (*E. coli*) and enterococci to demonstrate the presence of fecal pollution, because newer epidemiological studies have found a stronger correlation between swimming-associated gastroenteritis and these organisms than with fecal coliform or other indicator organisms.

In the Beaches Environmental Assessment and Coastal Health Act of 2000 (BEACH Act, P.L. 106-284), Congress required the 30 coastal and Great Lakes states to adopt EPA's 1986 water quality criteria for pathogens by April 2004. As required by that law, in July 2004 EPA proposed federal water quality criteria for 20 states that missed the deadline for adopting more up-to-date criteria for pathogens in their water quality standards. At that time, EPA said that 16 states were in the process of adopting revised criteria, while four states had not moved forward on the criteria. Most of the 20 states had standards in place, but EPA did not think they were adequately protective of human health because they rely on fecal coliforms as the pathogen indicator, rather than incorporating limits for *E. coli*. However, wastewater treatment officials and some in the scientific community have questioned use of the 1986 criteria document because it relies on data that are more than 20 years old. EPA acknowledges that problem and is working on additional epidemiological studies of pathogen indicators of illnesses at beaches in order to develop new water quality criteria to protect swimmers in recreational waters by October 2005, as mandated by

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[17] U.S. Environmental Protection Agency. Office of Water. *Report to Congress, Impacts and Control of CSOs and SSOs.* EPA 833-R-04-001. August 2004. p. 6-9.

[18] 68 *Federal Register* 216, Nov. 7, 2003, p. 63051.

the BEACH Act. In the mean time, the law requires EPA to press states to adopt standards based on the existing criteria for pathogens.

Other Policy Concerns

Critics of EPA's November 2003 proposed policy, including environmental advocates and a number of states, believe that the proposal would not have definitively restricted blending to wet weather events only. Some state officials, for example, said that allowing blending undermines the POTW's incentive for removing wet weather infiltration and inflow and otherwise improving the collection system.[19] These and other critics asserted that the policy would allow bypasses to become routine and would relieve treatment plant operators from analysis to determine if there are feasible alternatives to bypass/blending. According to these critics, blending succeeds in meeting permit discharge limits by virtue of dilution (mixing), not technological pollution control. Further, blending in effect shifts the cost of treating wet weather flows to drinking water suppliers, who become responsible for removing residual microorganisms or harmful disinfection byproducts that enter the water supply after discharge by the POTW. Others recognize the need for POTWs to blend wastewater in certain temporary circumstances but say that it should not be used as a long-term solution in order to avoid treating peak and base flows when treatment is feasible and can be done according to standard engineering practice.

Yet, while some were critical that the proposed policy would be too flexible, others believed that it would be too restrictive. Some of these critics, including municipal officials and sanitary engineering professionals that support blending, believed that the proposal contained a number of vague or excessively broad terms that needed to be further refined, such as what is "generally accepted good engineering practice" for design and operation of a POTW. They also charged that the policy sought to restrict discharge of blended wastes into sensitive receiving waters and that it would have required the system operator to utilize all peak flow capacity of sewers and other storage devices before commencing blending. These restrictions, they say, amount to EPA dictating design and operations of the treatment facility, which is contrary to the Clean Water Act. They argued that ambiguities would allow different EPA regions to interpret the policy differently, resulting in inconsistencies much like those that EPA had hoped to resolve by issuing the policy. These critics urged EPA to require that the policy be binding in all regions. On the other hand, a number of commenters urged EPA to do the opposite: to clarify that the final policy, as in the proposal, would allow states and regions the option to not authorize POTWs to blend, if that is their preference.

A number of critics of EPA's proposal — both those who oppose blending and others who favor it — asserted that the policy represented more than just interpretation of current rules, that it fundamentally would have changed existing

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[19] See, for example, Letter from Larson, Jeffrey H., Manager, Permitting, Compliance and Enforcement Program, Environmental Protection Division, Water Protection Branch, Georgia Department of Natural Resources. EPA Docket ID No. OW-2003-0025-0482, Jan. 9, 2004, 6 p.

requirements, such as the bypass rule and the ability of operators (not EPA) to design and operate plants in order to meet permit requirements. Some of these critics shared the view that in the 2003 proposal, EPA had transformed the policy into a rulemaking. As presented, the proposal was not a formal rulemaking (which would be subject to the notice and comment procedures of the Administrative Procedure Act (APA), although EPA did solicit public comments that it compiled in a docket), nor did it contain changes to current regulations. EPA characterized the policy as an interpretation of current rules and a draft guidance to implement such an interpretation. In addition, so long as the policy was not considered by EPA to be a rule, it was unlikely to be seen by EPA as subject to provisions of the Congressional Review Act (CRA, 5 U.S.C. §§801-808), which requires that before a rule can become final, it must be filed with the House and Senate and the General Accounting Office. The CRA allows Congress to disapprove agencies' rules by enacting a joint resolution of disapproval.[20]

Congressional Interest and Status of the Proposal

In Congress, the issues and practice of blending have drawn some Members' attention. In January 2004, during the public comment period on the proposed policy, Members with differing views on the proposal wrote to EPA to express concerns about it. In one letter, four House committee and subcommittee chairmen urged EPA to issue the policy, but said that the draft needed to clarify inconsistent regional enforcement. As drafted, the proposal would overstep federal authority and bypass the role of states in clean water decisionmaking, the lawmakers said. Further, they asserted that the proposal would establish "new back-door regulatory-type requirements to be imposed at the discretion of the permitting authority [that] will lead to less, not greater, national consistency."[21] These Members called for EPA to revise the guidance to make clear that blending is an acceptable practice and to make sure that the policy is implemented in a reasonable and consistent manner nationally.

At the same time, a bipartisan letter from 64 House Members of the Congressional Coastal Caucus criticized the draft policy as an environmental rollback that would endanger public health. Focusing on the concern that blending may lead to discharges of microbial pathogens into waterways, the letter faulted the draft policy for not ensuring that disinfection be required when a POTW blends its

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[20] For additional information, see CRS Report RL32240, *The Federal Rulemaking Process: An Overview*, by Curtis Copeland. It should be noted, however, that the CRA has a broad definition of the term "rule" that encompasses not only formal notice and comment proceedings under the APA but also policy statements, guidance, and other agency issuances that may have a legal or practical binding effect on the regulated public. See CRS Report RL30116, *Congressional Review of Agency Rulemaking: An Update and Assessment After Nullifcation of OSHA's Ergonomics Standard*, by Mort Rosenberg, pp. 2-3.

[21] Letter from Don Young, Chairman, Committee on Transportation and Infrastructure, John J. Duncan, Jr., Chairman, Subcommittee on Water Resources and Environment, Tom Davis, Chairman, Committee on Government Reform, Doug Ose, Chairman, Subcommittee on Energy Policy, Natural Resources, and Regulatory Affairs. EPA Docket No. ID OW-2003-0025-0533, Jan. 7, 2004, 3 p.

effluent. This letter recognized the problem of excess flows during storms, but said that blending sewage is an unacceptable alternative and that treatment facilities should consider building additional capacity or short-term storage until all the sewage can be treated with biological processes.[22]

Several developments have followed in the 109th Congress. On April 13, 2005, the House Transportation and Infrastructure Committee's Water Resources and Environment Subcommittee held a hearing about the practice of blending and received testimony from a number of municipal officials who support blending and environmental advocates who discussed their opposition to it. Also, legislation has been introduced that is intended to prohibit EPA from issuing rules or guidance that would authorize blending, unless necessary to prevent loss of life, personal injury, or severe property damage (H.R. 1126). (Congress took no action on a similar bill that was introduced at the end of the 108th Congress, H.R. 5421.)

Further, in approving legislation providing FY2006 appropriations for EPA (H.R. 2361), the House adopted an amendment that would prohibit EPA from finalizing, issuing, implementing, or enforcing the 2003 proposed blending policy. Supporters of the amendment, which the House approved by voice vote on May 19, 2005, said that the provision in the bill was not intended to have any impact on existing policies of EPA regions and states that currently allow blending, or on any Clean Water Act permit that allows blending. The amendment's sponsor, Representative Stupak, said it would maintain the status quo by preventing EPA from adopting policies that would weaken environmental standards.[23]

After publication of the proposed policy in November 2003, EPA solicited public comments for a 120-day period, compiling a docket with more than 98,000 comments. Many observers had expected EPA to issue a final version of the policy in mid- or late-2004, but the agency did not do so. Issues that reportedly continued to be unresolved included whether the policy would apply only to future CSO settlements or also to past enforcement settlements (if applied retroactively, the guidance could force the re-opening of consent decrees in a number of cases) and whether the guidance must require municipalities to conduct a "no feasible alternatives" analysis to prove that blending is necessary. On May 19, 2005 (the same day that the House adopted the Stupak amendment to H.R. 2361), EPA officials announced that, after reviewing the public comments and testimony presented to Congress, the agency had decided to withdraw the November 2003 proposal and not finalize the policy. The announcement said that EPA will continue to review alternatives (i.e., a revised policy or perhaps a rulemaking) to develop the most feasible approaches to treating wastewater and protecting communities.

Not surprisingly, environmental advocates were pleased with EPA's decision to abandon the proposal. On the other hand, municipal groups and other supporters of blending and the proposed policy were disappointed. They indicated that EPA's failure to issue a definitive policy continues to leave communities in an uncertain

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[22] "Competing Hill Critiques Hand EPA Tough Choices on Blending Policy." *Inside EPA*, vol. 25 no. 5, Jan. 30, 2004, p. 16.

[23] *Congressional Record*, daily ed., May 19, 2005, p. H3665.

position about whether and, if so, when treatment plant operators may use blending. Until the agency clarifies these issues, these groups say, municipalities are unsure about EPA's legal interpretation and what treatment plant improvements cities must make to ensure their compliance with the law.