EPA's stormwater program needs a significant overhaul

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Radical changes to the U.S. Environmental Protection Agency's stormwater program are necessary to reverse degradation of fresh water resources and ensure progress toward the Clean Water Act's goal of "fishable and swimmable" waters, says a new report from the National Research Council. Increased water volume and pollutants from stormwater have degraded water quality and habitats in virtually every urban stream system. To provide meaningful regulation, all stormwater and other wastewater discharge permits should be based on watershed boundaries instead of political boundaries. Moreover, the program should integrate stormwater management and land management practices, and focus less on chemical pollutants in the stormwater and more on the increased flow of water.

Following rain or snow in urban areas, large quantities of water flow over impervious surfaces -- such as streets, parking lots, and rooftops -- and pick up various pollutants like garbage, asphalt sealants, motor fuels, and other chemicals. This polluted stormwater is then collected by natural channels and artificial drainage systems and ultimately routed to nearby streams, rivers, and other bodies of water.

Although urban stormwater's role in degrading the nation's water supply has been recognized for decades, reducing that role has been difficult. In 1987, Congress brought stormwater control into the Clean Water Act and placed it under the supervision of the Environmental Protection Agency, which now oversees stormwater discharged by cities, industries, and construction sites. However, the current regulatory framework for

stormwater, which was originally designed to address sewage and industrial wastes, has suffered from poor accountability and uncertainty about its effectiveness at improving water quality. In light of these challenges, EPA asked the Research Council to assess its stormwater permitting program.

EPA's current approach is not likely to produce an accurate picture of the extent of the problem, nor is it likely to control stormwater's contribution to impairing water quality, said the committee that wrote the report. Currently, stormwater and wastewater regulations require separate permits; within stormwater regulations, different types of permits exist for municipalities, industries, and construction sites. The committee recommended that EPA should adopt a watershed-based permitting system that would encompass all discharges -- including stormwater and wastewater -- which could impact waterways in a particular drainage basin, rather than having many individual permits. Responsibility and authority for implementing watershed-based permits should be centralized with a lead municipality that would work in partnership with other municipalities. In addition, lead municipalities should receive enhanced funding to compensate for increased responsibility, the committee suggested.

Even in the absence of adopting watershed-based permitting, additional adjustments could be made to the stormwater program, such as bringing construction and industrial sites under the jurisdiction of their associated municipalities, referred to as "integration" by the committee. Federal and state permitting authorities do not have nor could expect to have sufficient personnel to inspect and enforce stormwater regulations on more than 100,000 discrete point source facilities discharging stormwater. A better structure would allow operators of municipal storm sewer systems to act as the first tier of control. EPA's successful treatment program for municipal and industrial wastewater sources could serve as a model for integration.

Because the area being appropriated for urban land use is growing faster than the population, stormwater management will be ineffective without also considering land use management, the report says. Future land development and its potential increases in stormwater must be considered and addressed in the EPA's stormwater regulatory program. For example, permit programs could be predicated on rigorous projections of future growth and changes in impervious cover, or regulators could be encouraged to use incentives to lessen the impact of land development.

Additionally, the committee recommended that the stormwater program focus less on chemical pollutants and more on the increased volume of water. In urban areas, stormwater flows rapidly across the land surfaces and arrives at streams in short, concentrated bursts of high water discharges, which in turn increases streambank erosion and accompanying sediment pollution of surface water. The volume of discharges is generally not regulated at all by EPA, the committee noted. Also, little account is given to the cumulative contributions of multiple sources and pollutants in the same watershed, because most discharges are regulated on an individual basis.

Further stormwater control measures assessed by the committee include: conserving natural areas, reducing hard surface cover such as roads and parking lots that channel stormwater into waterways, and retrofitting urban areas with features that hold and treat stormwater. Moreover, the committee recommended that the federal government provide more financial support to state and local efforts to regulate stormwater. Funds for the wastewater program greatly outnumber the stormwater program, even though there are five times more stormwater permit holders than wastewater permit holders.

Source: National Academy of Sciences