

WATER POLLUTION

Appearances Can Be Deceiving

For years largely ignored, toxic-chemical pollutants are now gaining priority attention

BY JANET RALOFF

No doubt there is a vague awareness that toxic chemicals from industry ... and thousands of other contaminants enter our waterways, but most of us assume that "somebody" removes these substances before their water comes out of the tap. This is not the case.

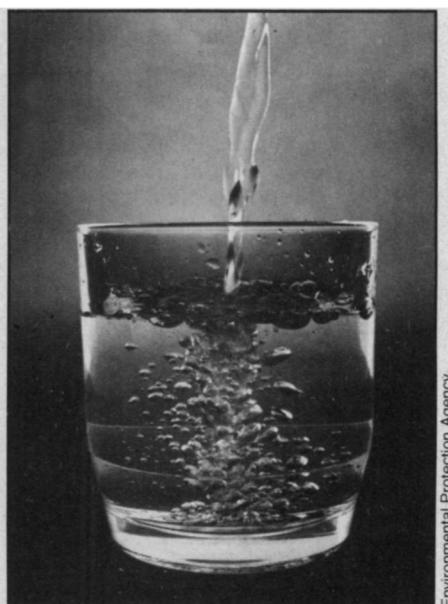
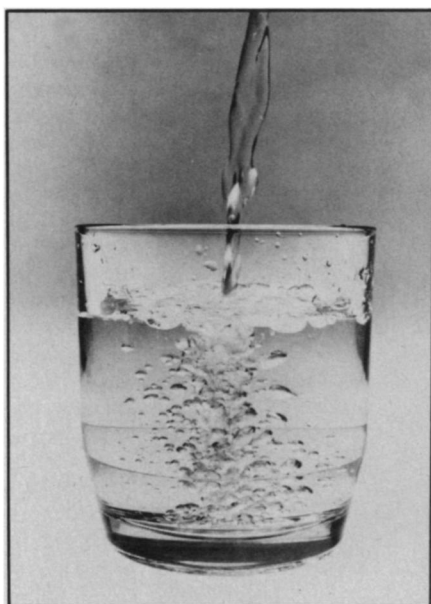
from Water Wasteland, a 1972 report of the Ralph Nader study group on water pollution

Although national programs have done much to aid polluted rivers that look dirty, smell foul and kill fish, they largely ignore a more subtle but just as important danger — toxic chemicals. Five years ago David Zwick and Marcy Benstock wrote the following in their book, *Water Wasteland*:

"The greatest threat to our drinking water is not disease carrying organisms but the massive quantities of sophisticated chemicals being poured into our nation's waterways ... Little is known about the estimated 12,000 potentially toxic chemicals now in industrial use. Hiding behind the veil of trade secrets, industry has been almost uniformly reluctant to inform public authorities about the chemical characteristics of the contaminants it is spewing into streams, lakes, and oceans; local officials charged with safeguarding drinking water supplies do not routinely check for chemical residues; we get a peek at the possible dangers of these chemicals only when hazards have become manifest.

"The situation is likely to get worse. An estimated 500 new chemicals are produced each year and introduced into manufacturing processes without public information concerning the extent of their dispersal throughout the environment, or of the dangers of that dispersal. This permissiveness toward new hazards is the logical extension of our historically lax attitude toward older sources of pollution. It may be costing us dearly."

According to Joseph Highland of the Environmental Defense Fund, an aggressive environmental group in Washington, that attitude is already costing us dearly. Many hazardous chemicals are suspected of causing cancer or physical and/or genetic



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Clear, sparkling water is no assurance that the water you use is pure or healthy.

mutations in our offspring. Ingesting them in small to moderate quantities may not cause you to drop in the street, but it may contribute toward your developing cancer sometime within the next 30 years. And because it's hard to pinpoint which of the tens of thousands of chemicals in your environment may have been a contributor to cancer or birth defects, the real danger is a quiet and insidiously well disguised one.

This does not, of course, come as any surprise to the Environmental Protection Agency (EPA) which was set up in 1970 to, in broad general terms, locate and identify pollutants in the environment, identify offending polluters and make them stop, and to work through enforcement of federal regulations to promote environmental cleanup.

In a pamphlet entitled "Is your drinking water safe?" issued earlier this year, EPA said 4,000 cases of illness linked to drinking water occur every year in this country. It also says that "effective June 24, 1977, your water supplier must periodically sample and test the water pumped to your tap. ... If tests reveal that a national drinking water standard has been violated ... your water supplier must take action to correct the situation and also notify the responsible state agency of the violation ... you, the consumer, must be notified too."

The catch to this protective strategy is the phrase, "If ... a national drinking water standard has been violated," says Walter Hang, a staff scientist for the New York Public Interest Research Group (NYPIRG)

and coordinator of their study on toxic chemical pollution in the Hudson River (SN: 10/8/77, p. 233). Although EPA admits in its pamphlet that "our sources of water supply are being endangered by hundreds of new chemicals and pollutants every year," it has not set drinking water standards for more than "10 chemicals, 6 pesticides, bacteria, radioactivity and turbidity (cloudiness)." In other words, there are no standards for most of the chemicals being dumped.

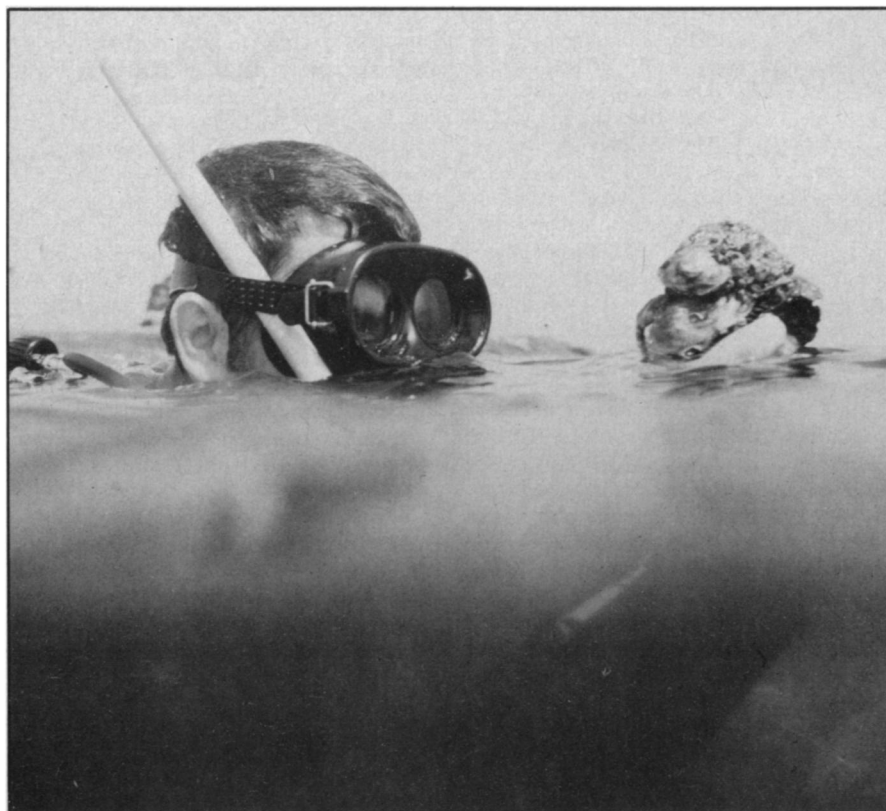
But there could and should be. In 1972 Congress passed the Federal Water Pollution Control Act Amendments (FWPCA), partly in response to growing awareness and concern over toxic-chemical discharges. One of its six goals declared that prohibition of the discharge of toxic pollutants was a national policy. FWPCA granted EPA authority to regulate toxic discharges and required the agency to issue within a year a list of toxic chemicals to be regulated by strict effluent limitations. According to *Troubled Waters*, the Hudson River study released by NYPIRG and the Environmental Defense Fund in October, EPA found only nine chemicals to regulate under Section 307(a) of the FWPCA, "despite the nearly 30,000 industrial chemicals now in use. EPA chose not to issue numerical standards for the few chemicals on the list. EPA's failure to issue a list of chemicals by the date specified in the act and the inadequacy of the list ultimately promulgated were challenged by environmentalists."

Those environmentalists included the Environmental Defense Fund, the Na-

tional Resources Defense Council and the National Audubon Society, which together with other environmental organizations brought a series of lawsuits against EPA, charging that by not setting standards on toxic chemicals the agency was shirking its responsibility under section 307(a) to set pretreatment guidelines for water, and to devise the list of hazardous substances for which effluent standards could eventually be set. In June 1976, EPA signed a court order requiring the agency to design a program to regulate the original nine chemicals and to regulate the discharge by 1983 of 65 priority industrial chemicals or chemical classes. That list now contains 129 individual chemicals.

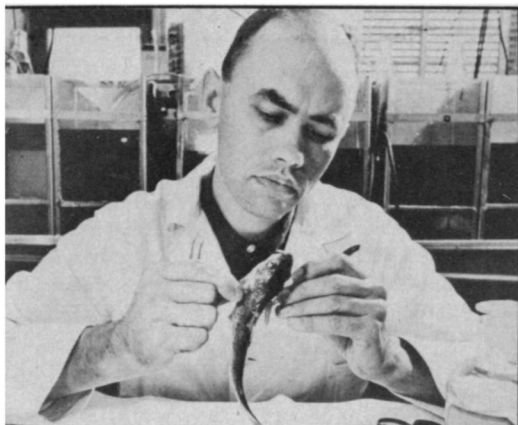
One way to decide which of the multitude of chemicals to set standards for first is to see which are being dumped and in what quantities. Section 308 of the FWPCA gives EPA authority to collect whatever monitoring data industry has and permits EPA to require any monitoring it needs to enforce existing standards or to develop new ones.

But the Hudson River study found that "despite this authority EPA failed to demand that industries report the type and amount of toxic chemicals they pump daily into rivers, lakes and streams." The



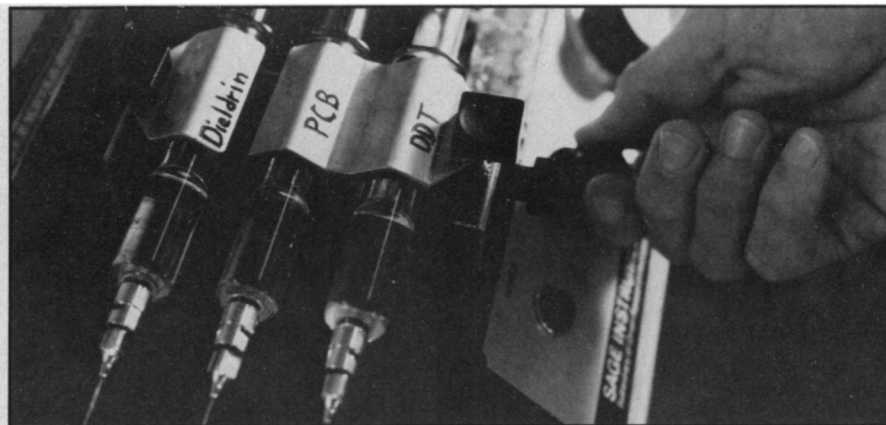
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This pathobiologist's finds will be used to study pesticide effects on tissues.



Interior Dept.

Donald Mount, the person most responsible for showing the pesticide endrin was responsible for large Mississippi River fishkills, is shown performing a fish autopsy; (right) a syringe pump controls the flow of test chemicals into oysters.



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study further charges that "EPA has refused to require industry to divulge what chemicals are present in its waste, let alone conduct an analysis of their potential environmental and health effects." The study says this is important, because "to date, scientists have uncovered more than 350 synthetic organic chemicals in the nation's drinking water. [Generally speaking, organic chemicals are those involving carbon compounds and include such families as alcohols, ethers, esters, aldehydes, amines, chlorides and nitroso compounds.] Although only a fraction of these have ever been tested for carcinogenicity, a recent survey by the International Agency for Research on Cancer identified over 50 as "known or potential carcinogens."

EPA has and continues, however, to sup-

port studies on organic-chemical pollution in water. EPA's Ervin Bellack says the 1972 study on New Orleans's drinking water found a large number of organics. In 1974 and 1975, the "80 city" study sampled drinking water in selected sites throughout the country, finding organics in every one, he says. A National Organic Monitoring study is finishing a fourth season of sampling in 113 cities, Bellack says. Unlike previous ones, this study examines samples during each season of the year to monitor how pollutant levels vary.

Finally, in November EPA released a study by researchers at the University of Illinois on chemical pollutants in the surface water of several major industrialized river basins throughout the country and the Great Lakes. More than 200 chemicals, mostly organics, were identified.

Walter Hang, pleased to have findings in the Hudson River study confirmed by this report, complains that even this study has failed to turn up the range of "exotic" chemicals and more than "trace quantities" of any of the organics because sampling was done midstream where turbulence and hydrologic interaction can disperse them. He says many organics concentrate in sediment and interface zones or in floating lipid puddles — all of which can be easily missed by unrepeatable midstream samples. The fact that the Illinois study "didn't find one molecule of PCB fills me full of distrust," he said, because the Hudson River — a PCB disaster area — was among rivers sampled by the Illinois group.

Walter Lyon, a member of the Pennsylvania Department of Environmental Re-

sources, testified earlier this year before a House subcommittee saying that the nation's pollution monitoring systems are "obsolete" and "lack leadership." Lyon, a member of the National Academy of Sciences study group on environmental monitoring said, "The situation is one of pure chaos and disorder... important interrelationships in the environment having to do with various toxic and other substances are missed and overlooked." Fragmented, the "system is of little use, it is inefficient, information flows slowly, if at all." Last, he said that by their design, these monitoring programs "do not anticipate pollution problems" as have occurred with PCBs and Kepone. Others who testified echoed complaints described earlier and called for more and better data collection, more attention to toxic chemicals, and better coordination between data-collection, regulation-setting and enforcement agencies at all levels of government.

A comprehensive assessment by the Congressional Research Service in September outlined the legislative and bureaucratic problems hindering identification, regulation and cleanup of toxic water pollutants. It quoted one person who testified at the House subcommittee hearing mentioned earlier as saying EPA lacks the coordination to "trace a pollutant from one medium, such as air, to water; yet we know there are clear relationships."

Robert B. Schaffer, who heads EPA's organics branch, explained how some of

these situations developed. Historically, EPA and water-treatment authorities have focused on conventional water-quality indicators such as suspended solids, biological oxygen demand (BOD), bacteria and pH, he said. Most of these correspond to tangible signs of pollution—mucky water, stench and sick or dying water life. Water polluted with toxic chemicals, however, may be sparkling clear, sport seemingly healthy fish and plants and, for all appearances, be pristine. EPA has in recent years cracked down on polluters who violate traditional water-quality standards—and in many cases our waterways and tap water look and smell cleaner. But what environmental groups have been working to prove is that appearances can be deceiving.

Schaffer, explaining that EPA "was not clairvoyant," said his agency was until recently largely unaware of the degree and magnitude of toxic-chemical pollution—particularly that of organics. Many sophisticated monitoring techniques that have permitted measurements of some of these chemicals in quantities as small as parts per million, billion or trillion were not available only a few years ago, he said. Other chemicals must be sought specifically, "and we didn't have the hindsight working for us to always tell us which chemical to look for."

Finally, the charge that EPA has not asked specific industries what they are discharging is only a half truth, he says. In

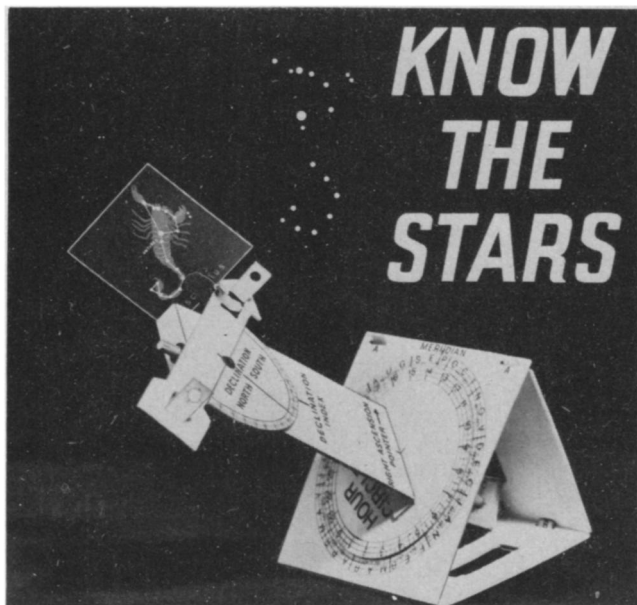
order for an industry to receive an effluent-discharge permit from EPA, it has to complete a form which asks applicants to check off from a printed list those chemicals it discharges and in what quantity. "We may not have listed everything then we would now," and some companies were not aware of what or how much of a given chemical they discharged, he said.

Another loophole in the process is that only those discharging into public waterways are required to get effluent-discharge permits. Those discharging directly into municipal water-treatment systems were not required to list all effluent components. As a result, many chemicals flowed straight through the cleanup systems and eventually out your faucet. Why? Most waste-water treatment systems are not designed to remove toxic chemicals—just pollutants that alter pH, BOD, suspended solids count, etc.

Schaffer and others confirm that technology exists to remove most organic chemicals; the problem is cost. Activated-charcoal filters work well, but clean charcoal must be replenished often—a costly process. One technique gaining interest uses ultraviolet light and ozone. Arthur Nall of Houston Research Inc. says his company has tested the technique in pilot plants and that it "degrades any organic we've touched"—including pesticides and cyanides. But cost makes it prohibitive for other than hard-to-clean waste streams. A laser purification system being developed at Johns Hopkins Applied Physics Laboratory also holds promise.

Paul Palmer, president of Zero Waste Systems, Inc., in Oakland, Calif., has another solution—toxic recycle. He complains, however, that government policies support waste dumping not recycling, and that attention and research dollars to develop hazardous/toxic-chemical recycling systems are hard to get. Resource-depletion allowances encourage resource plunder, he says. Worse still are government approved rail-freight rates that can charge up to five times as much to move recycled as virgin materials, he says. EPA worries about safe ways to dump wastes when they should be promoting wastes as a resource. But "recycling is a state of mind whereby you build into industrial processes the way to separate different 'wastes' before they become irretrievably lost to an effluent stream, he says. It is usually difficult and costly to reequip plants that were designed to treat used chemicals as wastes.

Although EPA has been criticized for its handling of the toxic-chemicals problem, changes are underway. For example, EPA's Jeffrey Miller told the Water Pollution Control Federation's annual meeting that the emphasis of the effluent discharge program "is shifting dramatically from controlling traditionally regulated pollutants... to pollutants with toxic characteristics, such as organic chemicals and most heavy metals." He said EPA's concern over toxics



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will begin showing up in 1979 when the effluent-permit program begins to turn toward control of the 65 "priority pollutants" named in the 1976 lawsuit.

July 1 was the deadline for industry to install the "best practicable technology" for removing wastes from water. Miller promised that EPA will begin cracking down on violators. But the big issue all are gearing up for is the 1983 deadline (which may be postponed for a year) for installation of the "best available technology." And EPA is developing new regulations, he said, to limit discharge of the priority pollutants from more than 100,000 plants that discharge into sewer systems.

Part of the compromise bill approved by a congressional conference committee in November would extend EPA's ability to regulate "best management practices" on industrial sites. Currently EPA can only restrict effluent discharges into rivers.

Environmentalists in Washington have heralded a memo by EPA's administrator to regional offices on waste dumping as another positive sign. In it, Douglas Costle urges regional administrators to "press vigorously" for other forms of disposal.

Finally, several states are taking their own initiatives. The Water Pollution Control Federation reports, for example, that the Connecticut Health Department will be required to monitor the organic-chemical content of all public water supplies "to determine what potential carcinogens they contain." The act also requires the health department to rank any carcinogens found in order of their potential danger and to estimate costs of removing the very dangerous ones.

New Jersey's department of environmental protection has proposed logging hazardous chemical wastes from "cradle to grave" in hopes of stopping clandestine dumping.

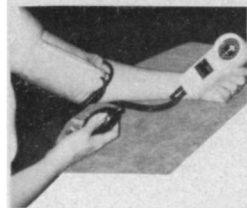
For now, however, monitoring and cleanup of chemical pollution in waterways are performed inconsistently throughout the country. In its drinking water pamphlet EPA says:

"The major responsibility for bringing you safe drinking water rests with ... ultimately you as a concerned citizen ... Congress said in the Safe Drinking Water Act that you have a right to expect water that meets minimum national standards for protection of public health. You have a right to be told — and your water supplier must tell you — if your water does not meet those standards. He is also obliged to inform you if he is not monitoring the water as required. With such information ... you will be able to apply pressure on the water supplier through public opinion to do whatever is necessary to bring you safe water."

What EPA appears to be saying, at least for now, is that the speed at which action occurs, the prominence that major polluters receive, and the direction in which regulation proceeds are still dependent upon citizen interest and action.

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