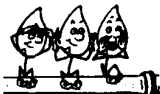


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Percolation & Runoff

Carcinogenesis could be the first book of our last testament, if we are to believe the media these days, to be followed, no doubt, by lamentations—not just the fearsome founsome of PCBs, YCM, asbestos, and chloroform but, according to a *New York Times* article, "more than 1000 agents that have been pinpointed by scientists as definite or suspected causes of cancer." Not all of them are waterborne, of course, but water, being what it is and where it is and how it is used, usually gets involved. This daily diet of disastrous disclosure has now brought Dr. Jonas Salk, developer of the first polio vaccine, to the rescue with a new immunization technique, certain to be as effective as his first, for people worried about carcinogens. "The best thing to do," he said in a recent interview, "is quit reading the newspaper." Or if you must read, concentrate on Congressional press releases such as that recently issued by Senator Vance Hartke to promote his toxic substances control bill. "Legislation that could lead to eliminating 80 per cent of the causes of cancer in humans was approved unanimously by the Senate Commerce Committee..." was the pitch. That and a bill to make cancer illegal should clean up the problem nicely.

Lobbying against any such legislation, of course, would be the home water-purification-gadget industry. Drop dread and it drops dead. So the advertisements of Estelle Products Co. of Rock Falls, Ill., carry the message, "DOCTORS WARN Chlorine in Drinking Water Causes CANCER, Heart Attacks, and Premature Aging! The New Hurley Water Purifier Completely Removes CHLORINE, Tastes That Are Musty and Fishy, Metallic and Swampy; Also Rust, DDT, Pesticides, Slime and Odors" and offers a no-obligation call by its "health consultant," Philmar Inc. of Los Angeles also zeroes in on "THE BAD NEWS OF CHLORINE," noting that: "Now research has established the embarrassing fact that chlorine and not cholesterol is the real cause of our number one killer, namely, heart attack. Until a substitute for chlorine is found, your only salvation is the installation of a Philmar Water Purifier, the only purifier certified by the EPA for complete elimination of water born [sic] bacteria plus removing the chlorine for good measure." And on the table of a restaurant in McLean, Va., there appeared the message: "WE CARE—A Pollution Control Product. Mark II, removed the following impurities from the drinking water served in this restaurant: chloroform—DDT—dieldrin—parathion—toxaphene—industrial chemicals—solvents—chlorine—arsenic—chromium—mercury—cysts—larva—virus & others." The Mark II, too, we understand is registered by EPA. What next but more revelations?

A revelation of another kind came out of a recent Rockefeller Foundation research report. Conducted by Dr. Michael Petit, a microbiologist from Colorado State Univ., the research sought to trace the presence of environmental poisons back through the centuries by sophisticated analysis of bat guano, layer by layer, as deposited in the two caves of the Southwest. The changing levels of such poisons, Dr. Petit expected, would indicate the impact of

man's industrial activity, suggesting a scientific standard for pollution control policy. What he found instead was "new evidence that mercury levels in the modern man-polluted environment were equaled in a pristine era some 16,000 years ago during the last glaciation, when today's southwestern desert was much more humid."

Then, attempting to track mercury through plants and into animals, he compared the amount of the heavy metal on the plants' surface—the fallout from local industry—with the concentration in the plants' internal tissues. Again he was surprised, discovering that plant tissue content in a heavily polluted area was significantly lower than that in a relatively "clean" area. Dr. Petit's hypothesis is that the mercury in plant tissues comes from natural underground mercury deposits that rise toward the surface as vapor and are dissolved by ground water. In an acid surface soil, he suggested, the solution is converted into an ion of mercury that is readily taken up by the roots of plants.

Next thing you know we'll find pollution propitious.

Propitious pollution is what the city of Newark, N.J., might be said to be planning for its 35,000-acre Pequannock watershed as a means of getting the city out of its dollar doldrums. Saddled now with a \$1.5 million per year tax bill on the property, the city has plans to develop 3500 acres of the tract to accommodate construction of 5280 units of clustered housing, a half-dozen convention centers, and several hotels, office complexes, and industrial parks. Income from such a project, labeled a "balanced open space plan" in which all necessary ecological precautions have been observed, will presumably pay not only the taxes on the total property, but will help finance the filter plant that the city has had to build to treat its water supply and, hopefully, then some. Meanwhile, officials from the communities near the area to be developed and conservationists throughout the state are girding themselves to fight this invasion of what they call the "Last Frontier."

Elsewhere in the Garden State, water and watershed plans have others of the populace up in arms. At Paterson a citizens' committee called *Save-A-Save Paterson's Living American Social Heritage*—has joined the city in opposing a proposal by the North Jersey Dist. Water Supply Com. and the Hackensack Water Co. to divert 80 mgd from the confluence of the Passaic and Pompton rivers into the Wanquee reservoir, the supply of which is now being overdrawn by its participating cities, of which Paterson is one. Such a diversion, claim the opponents, would drive up the Great Passaic Falls, second largest waterfall on the East Coast. A reduction of flow of 4 per cent is the estimate of the proposers, of 80 per cent is the word among opposers.

Meanwhile the \$300 million Tocks Island dam and reservoir project on the Delaware River, first proposed in 1945 and authorized by Congress in 1962 and killed last fall by a vote of the Delaware River Basin Com., continues to be flogged by environ-

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mentalist groups who fear its resurrection if membership of the commission should change. Last fall, the chief of the Corps of Engineers joined in recommending to Congress that the project be deauthorized, but the validity apparently lingers on.

About Round Valley reservoir, dissension continues too, despite the fact that the state finally signed a contract last October to construct a pipeline that will make the reservoir's water available for public supply. Built back in the early 1960s when a drought demonstrated the inadequacy of North Jersey supplies, the reservoir has remained untapped since then while the cities that needed the water argued about how much each should pay, leaving it to the state in the end to tackle the job. Now, however, the squabble is concerned with tapping another of the reservoir's resources, a multimillion-dollar recreation area that will be ready for its grand opening this June, except that the access road to the area is still in the blueprint stage and cannot be finished until mid-1977. And local residents who live on the three small country roads that now lead to the park have threatened to close them off to avoid the massive traffic jams that still afflict nearby Spruce Run reservoir recreation area.

New Jersey water, however propitious, does seem to give rise to considerable thermal pollution, personborne!

Fleeting pollution, meanwhile, was plaguing the city of Escondido, Calif., following newspaper reports last November that its water supply was contaminated with PCBs. Source of this startling information was indicated as testimony by EPA before the Subcommittee on the Environment of the Senate Commerce Com. Remembering, no doubt, the viruses that appeared in the public supplies of Billerica and Lawrence, Mass., just in time for EPA's testimony on the Safe Drinking Water Act, Lawrence Michaels, Escondido's director of utilities, did some digging for facts and then placed them before California Senator John Tunney, a member of the Subcommittee on the Environment, in these terms:

It was very difficult from the reports and subsequent inquiries to determine exactly when and where the water samples which indicated PCB contamination had been taken because they had not been taken by EPA. However, we are quite certain that they are a result of samples taken in January 1975 by ~~Monsanto Corp.~~, the only U.S. manufacturer of PCB's, at a local firm, Capacitor Specialists, which uses PCB's in producing capacitors. The samples were taken to determine the level of PCB's in the public water supply as background information in determining the amounts of PCB's discharged to the sewer system from the production process.

The sampling point for taking the water was a drinking fountain within the plant area where the PCB's were used in the

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production process. Such sampling procedures are so incredibly unscientific that any results would be totally invalid and would guarantee that PCB contamination would be present in the sample. However, such a sample would bear no relationship to any possible contamination of the public water supply. Of the five cities identified to the Subcommittee by EPA as having PCB's in their drinking water, only Sellersburg, Ind., and Winnebago, Ill., were actually sampled and tested by the EPA laboratory in Cincinnati, Ohio. The remaining three

cities were identified from the Monsanto reports and the information on Bridgeport, Conn., and New Bedford, Mass., may be as suspect as the Escondido sample.

Since the water supplied to the Escondido plant was Colorado River water imported by the Metropolitan Water District of Southern California (MWD) which supplies water to much of the Los Angeles-San Diego metropolitan area, MWD was requested to perform an accurate test of Colorado River water. Their report indicates no measurable amount of PCB's exist in the Colorado River water at this time. Since the Colorado River is unpolluted by industrial waste discharge

and is controlled by large reservoirs which would tend to maintain traces of any accidental contamination for a very long period of time, it is reasonable to assume that there was no contamination when the Monsanto sample was taken in Escondido.

It is unfortunate that EPA would present such unreliable information to the Subcommittee and also unfortunate for those five cities that the information would be made public without some indication of its real source and without notifying the affected cities. However it would be far more unfortunate for the entire country if Congress would enact legislation to attempt control of PCB's in the environment because of such false information.

Sometimes, it seems, EPAs can be more of a headache than PCBs.

Speaking of headaches, the *Executive Fitness Newsletter* of last Feb. 14, recommends, among a few other approaches that certainly have no appeal to us, one that has our vote: "A hot shower with stream of water directed over your neck and shoulders" or, if you are real conservation minded, "a towel soaked in hot water and applied to the back of the neck" as ways to get relief. What with the effective date of the regulations of the Safe Drinking Water Act coming closer and closer, these are qualities of water that it may pay to remember.

On the matter of quality, we learn that Monsanto Corp., now phasing out its PCB production is phasing in MCs—malodorous counteractants. Whereas most stinknots now in use work by masking unpleasant odors with stronger, more pleasant ones, the MCs are compounds that "turn the nose off" to the bad odors, leaving only a perception of a fresh air smell. "A few parts per million in a room," it is reported, "will almost instantly eliminate human perception of malodors, and the effect will last for hours." The first applications are expected to be in home air fresheners and personal care products (that's where the money is), but after that why not to water supplies? Just think, *also control a la nez!*

A la laser, on the other hand, we hear, water can be upqualified by modern techniques. It was Dr. John G. Parker of the Research Center of the Applied Physics Lab. at Johns Hopkins who found a method of reducing bacteria counts in samples taken from the Potomac River by laser irradiation. Dr. Parker, it is reported, used collimated light radiated from a rare earth called neodymium, embedded in a host material called yttrium aluminum garnet (YAG), to do the job.

After first increasing the oxygen content of the water, Dr. Parker fires the YAG laser into it and the light energy is absorbed by the oxygen molecules, causing them to be

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raised to a highly energetic state. In that state, the oxygen molecules diffuse through the water and collide with the bacteria, where the energy is released.

It should be noted, we understand, that the energy involved is equivalent to raising the temperature of the oxygen molecule to 17,500F and that this energy when released at the point of collision is capable of burning a hole in the bacterium cell wall. Laboratory tests of the "sterilized" water, it is reported, indicate elevated levels of amino and nucleic acids characterizing the cytoplasm, or insides of the bacteria, showing clearly that the bacterium cell wall has indeed been torn apart.

Meanwhile a water-purification process developed for individual rural water systems uses only electricity, no neutralizing chemicals. The process involved, first uses an electrochemical flocculator with aluminum electrodes that cause suspended particles to accumulate and settle out. Then an electrochemical process releases chlorine from salts already present in the water to neutralize the bacteria. Developed by Dr. E. A. Hiler of Texas A&M, the system is said to work with supplies having as little as 50 ppm of chlorine-containing salts and is expected to be capable of purifying 500 gpd at an operating cost of 25 cents.

Are we, we wonder, with it?

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