

atoms), is dangerous and in the long run deadly to people and other living things. This is true both for individuals living and for the future generations they beget, even if the results will be far in the future in the case of the hereditary effect.

There is little doubt the world would be a safer place for our children's children if there were less radiation from the testing of atomic bombs. This is a long-term consideration. People may live, on the average, a few days less due to atomic debris. It is more sure that it will affect the generations to come.

The radiation danger is such that no sane rulers mindful of the future of their peoples would begin an extensive atomic war which would poison the atmosphere and the earth.

As the experts testified on Capitol Hill, they talked of different time scales and from different backgrounds. Little danger today can become the high probability of death in the future.

The X-ray specialist does not hesitate to use heavy doses of irradiation or take many X-ray photographs if the patient requires it, although each exposure builds up radiation danger.

However, a more severe limitation of medical radiation than in the past is being urged by the experts.

The point of controversy between the opinions of those who favor and oppose stopping atomic testing is whether future genetic risk is worth the added assurance of atomic preparedness resulting from testing.

It is not so much a scientific question as a human and political judgment.

Science News Letter, June 15, 1957

## CONSERVATION

# Chemical Cuts Water Loss

**At a time when demand for water is growing, a chemical offers a solution to water loss through evaporation, a problem faced by nations throughout the world.**

► AS MUCH AS 65% of the water lost from the nation's reservoirs and lakes through evaporation might be saved by a chemical shield approximately 20 millionths of an inch thick.

A one-molecule thick coating of the chemical compound hexadecanol on the water's surface has eliminated more than two-thirds of evaporation losses in laboratory experiments conducted by the Department of the Interior's Bureau of Reclamation.

Now, Interior Secretary Fred A. Seaton has announced experiments are under way to see if hexadecanol will work on large water areas.

Rattlesnake Reservoir, near Loveland, Colo., with a surface area of 97 acres or about one-sixth of a square mile, is the site of the experiments.

There the soap flake-like particles of hexadecanol, a chemical compound found in some medicines and cosmetics, will be slowly dispersed on the water surface, forming a film that shields the water from air and sun. Even if it is 20% effective—one-third as good as laboratory results indicate—in cutting losses through evaporation, says

W. A. Dexheimer, commissioner of the reclamation bureau, the water savings would be "tremendous."

Each year the nation's reservoirs lose as much as eight feet of water because of the action of wind and sun stealing away molecules of water. While this precious water is literally disappearing into the thin air, our consumption of water grows. It is more than four times what it was in 1900. And by 1975 it is estimated we will be using twice as much as we do today.

The tests of hexadecanol at Rattlesnake Reservoir will give the reclamation scientists the information they need on just how the chemical should be dispersed over the water surface, how long it can be maintained, and how strong the layer is.

Compression of the one molecule thick layer is determined, as illustrated in the photograph below, by the spreading of drops of oil which is graded from 5 to 42 dynes pressure per centimeter. The round, doughnut-shaped container floating near the boat's bow dispenses the flake-like particles of chemical on the water's surface.

Later this summer, if the studies prove effective, full-scale monomolecular layer experiments will be held at Lake Hefner, the main reservoir for Oklahoma City, where actual measurements of reduction in evaporation losses will be made.

Hexadecanol, or cetyl alcohol, does not affect the taste or odor of water and is completely nontoxic to higher animals, the scientists report. It also has "no discernible effects on aquatic life." In one form it is used in detergents.

## Research in Australia

Both Australia and South Africa, in addition to private research groups here, have been conducting research on the problem of water loss through evaporation in recent years. (See SNL, December 8, 1956, p. 365.)

In a 14-week test of the effectiveness of a film of cetyl alcohol on the surface of a reservoir, Australians have reported 200,000,000 gallons of water were saved.

At a cost of approximately one penny per thousand gallons, an amount of water equivalent to six-weeks' summer consumption was saved.

W. W. Mansfield, of the industrial chemistry division of the Commonwealth Scientific and Industrial Research Organization, reports this method of conserving water would not exceed five cents per thousand gallons and the cost is much lower than that of other possible methods.

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**WATER CONSERVATION**—Lloyd O. Timblin, Jr., and Quentin Florey, laboratory physicists with the Bureau of Reclamation, are testing the surface film pressure of hexadecanol on the water at Rattlesnake Reservoir, Colo., by applications of oil.