

The figure I presented of one million acres per year being removed from photosynthetic productivity is a commonly used figure which is undoubtedly conservative. It corresponds to a square of slightly under 40 x 40 miles. It is half the area under concrete in the National Interstate Highway System. It doubtless greatly underestimates the amount of land lost annually to dumps, parking lots, shopping plazas, and mine pits and tailings—not to mention over 1.25 million new housing units started in 1966 and the areas put out of production by pollution.

I hope this information will be of use to you.

Very sincerely yours,

LaMONT C. COLE,
Professor of Ecology.

NUCLEAR POWER: IS IT SAFE?

DEWITT, N.Y.

DEAR EDITOR: How can we be sure that the power reactor being built in our area satisfies reasonable safety requirements, (accidents, waste, etc.)? We would like (a) a general answer, for any part of the U.S., (b) specifically, for the Niagara Mohawk Power Co. of N.Y.

Mr. and Mrs. F. R. ROHRLICH.

The power reactor in question is the Nine Mile Point Nuclear Station under construction by the Niagara Mohawk Power Company on the shore of Lake Ontario, about seven miles northeast of Oswego, New York. When completed, this would be the largest nuclear reactor ever built for civilian electric power, although other still larger reactors are being planned for other sites. It will produce about 525 million watts of electrical energy; the fuel will consist of about 100 tons of uranium.

In such a reactor, small amounts of radioactivity will be released into the water of Lake Ontario, and into the air from the reactor's smokestack. Although the amounts of radioactivity are small, there remains a definite risk, for any amount of radioactivity does some damage to living things. Niagara Mohawk estimates that the maximum amount of radioactivity released from the smokestack during normal operation will be about 130 curies per day (a curie is the amount of radioactivity of one gram of radium). About one-fiftieth of a curie will be released each day to the waters of Lake Ontario. These levels are well below the standards established by the Atomic Energy Commission, but the question of their safety is actually more difficult to resolve.

In the absence of adequate information on the effects of radiation, it is difficult to set safety levels. As in the problems of fallout, there are also complicating questions created by the fact that levels of radioactivity that are low to start with may be concentrated by plants and animals, eventually appearing in human food at higher doses than would be otherwise expected. Little information on the movement of radioactive substances through the living environment has been available, and as a result, the setting of safety standards for radioactive emissions has been necessarily somewhat arbitrary.

More recently, additional information on the levels of radioactivity in areas surrounding nuclear reactors has become available, which should make possible at least the beginnings of an effort to evaluate AEC standards against the risk which is actually present. A coming issue of *Scientist and Citizen* will summarize our current knowledge in this area.

The possibility of a serious accident must also be considered. Should even a small proportion of the radioactive fuel of a reactor be released to the atmosphere, the results would be catastrophic. Such an event could occur if the rate at which fission is proceeding in the fuel elements were to increase beyond the safety level. This would result in enormous overheating of the reactor core, followed by melting or cracking of the structures which contain the uranium. A cloud of highly radioactive gases would be released which would then move with the wind, doing enormous damage until it dispersed.

The Atomic Energy Commission bears the responsibilities for seeing that both normal operating hazards and the risk of a major accident are kept to a minimum. This is done by locating reactors in relatively unpopulated areas, and by seeing that they are designed to minimize risk. The Nine Mile Point Station is