

What I have just said can be restated to say that we are beginning to realize that we have a complicated system on our hands. Burning solid waste adds to air pollution as do the gases emitted in sewage treatment. Sewage may destroy the usefulness of a water supply. The automobile, a transportation device, is a major source of air pollution. Irrigated agriculture adds salts to the rivers. Pollution management clearly requires more than the concept of "put it where it won't be seen". We must study all our activities in the light of their total impact on the environment.

Science has a principle called conservation of matter. In essence, this states that matter cannot be destroyed. It may be converted into other forms, but its essential elements remain. We would not be far wrong if we drew from this a principle of conservation of pollution which said that waste materials, once produced, are with us always. With the exception of that relatively small fraction of waste materials which man reclaims for his own use and the portion of the waste materials which are converted by natural processes into useful material, the principle of conservation of pollution is essentially valid. When man burns solid waste, he does not eliminate it, he merely converts it to gases and particulate matter which may pollute the atmosphere. If we dump pollutants in the ocean, we are not eliminating them, we are simply putting them where we cannot see them. Conventional sewage treatment removes a portion of the pollutants from the water being treated, but these pollutants are not destroyed. In part, they are converted to less obnoxious gaseous or liquid forms which are discharged through the atmosphere or to a water body. In part, they remain as solids which must be "disposed of" in some way. When we bury solid waste in a sanitary land fill, it disappears from view, but it is still there. Water moving through the fill may leach material from the waste and carry it to the ground water or to another stream for years after the original disposal.

A few cities are now requiring every home to have a garbage grinder. This greatly eases their problem of garbage collection, but at the expense of increasing the magnitude of their sewage treatment problem. Solid waste is being changed to stream pollution. This may indeed be the most economic solution for the individual city, but what of the cities downriver whose water is more polluted? Applying salt is an effective means of snow removal from roads and streets, but melting snow and rain must eventually carry this salt to a stream or the ground water.

It is probably true that conventional means of dealing with pollution could, if pursued with vigor and sufficient funds, provide a short term solution to our problem. That is to say, a substantial investment in present technology might alleviate our problems for a few years. Not only would the expenditure be very large, perhaps more than we can really afford to pay, but such an approach might have another most undesirable effect. It could lull us into believing that we have the situation in hand, as we have been lulled in the immediate past. If this led to a failure to prosecute an effective research program on new technology, we would eventually find ourselves in a position which is even worse than our present one, but with nothing better by way of a solution. It is interesting to speculate where we might be today if we had recognized the environmental pollution problem in 1946 and