methanesulfonate, were tested in both the dominan lethal and in specific locus tests. All four mutagens were highly positive in the dominant lethal test, but only slightly positive or negative in the specific locus test. However, the results are difficult to compare because sperm which were used in the two tests derived from cells which were treated at very different stages of their development.

The number of animals which has to be used to detect a doubling of mutation frequency is so great that the expense of this test makes it quite impractical to use as a general screening technique. More seriously, however, is the failure to detect a significant increase in mutations with the above four strong mutagens, either because of lack in statistical power or because of intrinsic defects in the test system, strongly militates against the practical utility of the specific locus test.

CITED REFERENCES

(*1*) RUSSELL, W. L.: X-ray Induced Mutations in Mice. Cold Spring Harbor Symposium 16: 327–366, 1951.

(*2*) CATTANACH, B. M.: Chemically-induced mutations in mice, Mutation Res. 3: 346–353, 1966.

Dominant lethal test.—Dominant lethal mutants are convenient indicators of major genetic damage which have been used in mammals for measuring effects of X-rays (*1*), and more recently, of chemical mutagens (*2*, *3*, *7*, *8*, *13*, *15*, *22*). Data on induction of dominant lethal mutants in mammals may be appropriately extrapolated to man, especially as most recognizable human mutations are due to dominant autosomal traits (*21*). The genetic basis for dominant lethality is the induction of chromosomal damage and rearrangements, such as translocations, resulting in nonviable zygotes; evidence for zygote lethality induced in mammals by X-rays and by chemical mutagens has been obtained embryologically (*16*, *25*, *26*), and cytogenetically (*4*, *15*, *17*, *23*), respectively. Additional evidence for the genetic basis of dominant lethality is derived from the associated induction of sterility and heritable semisterility in F_1 progeny of males exposed to X-irradiation (*19*, *25*) and to chemical mutagens (*5*, *12*, *14*); translocations have been cytologically demonstrated in such semisterile lines in mice (*7*, *18*, *24*), and in hamsters (*20*).

The induction of dominant lethal mutations in animals can be assayed, with a high degree of sensitivity and practicality, following acute, subacute or chronic administration of test materials, either orally or by any parenteral route, including the respiratory. For these reasons it is feasible to integrate such tests in the scope of routine toxicological practice (*9*). Following drug administration to male rodents, they are mated sequentially with groups of untreated females over