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ON THIS COVER This month's cover comes from the paper by William L. MacCready and John A. Wethington, Jr. and represents a portion of the centrifugal contactor. This figure was taken from the book *Engineering for Nuclear Fuel Reprocessing* by Justin T. Long.

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COMMENTARY

This special group of papers in "Realistic Estimates of the Consequences of Nuclear Accidents," which appeared in the May 1981 issue of *Nuclear Technology*, presents an examination of the bases for the source term definitions contained in Technical Information Center 14844 "Calculations of Distance Factors for Power and Test Reactor Sites," and in U.S. Nuclear Regulatory Commission Regulatory Guide 1.4 "Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss-of-Coolant Accident for Pressurized Water Reactors." As such it is of vital interest to the nuclear community and all others concerned with nuclear safety and regulation.

One aspect of the accident at Three Mile Island (TMI) that was apparent to some was the large discrepancy between the iodine release and the consequent dose as predicted by the traditional assumptions versus the actual event. This discrepancy was particularly striking in view of the general agreement between analysis and experience with the noble gases. It would appear that the difference is fundamental rather than a matter of numerical detail. If it is fundamental, the appropriate source terms for accident evaluations may be questioned. The papers that appeared in May represent the results of the efforts of several investigators in examining the source term issue in the light of the TMI experience.

These papers are the opening lines in what is expected to be a vigorous and, we trust, healthy and enlightening reexamination of this vital issue. As with all meaningful scientific inquiry, the process of hypothesis and evaluation is always necessary, sometimes agonizing, and hopefully results in greater understanding.

Roy G. Post, Editor