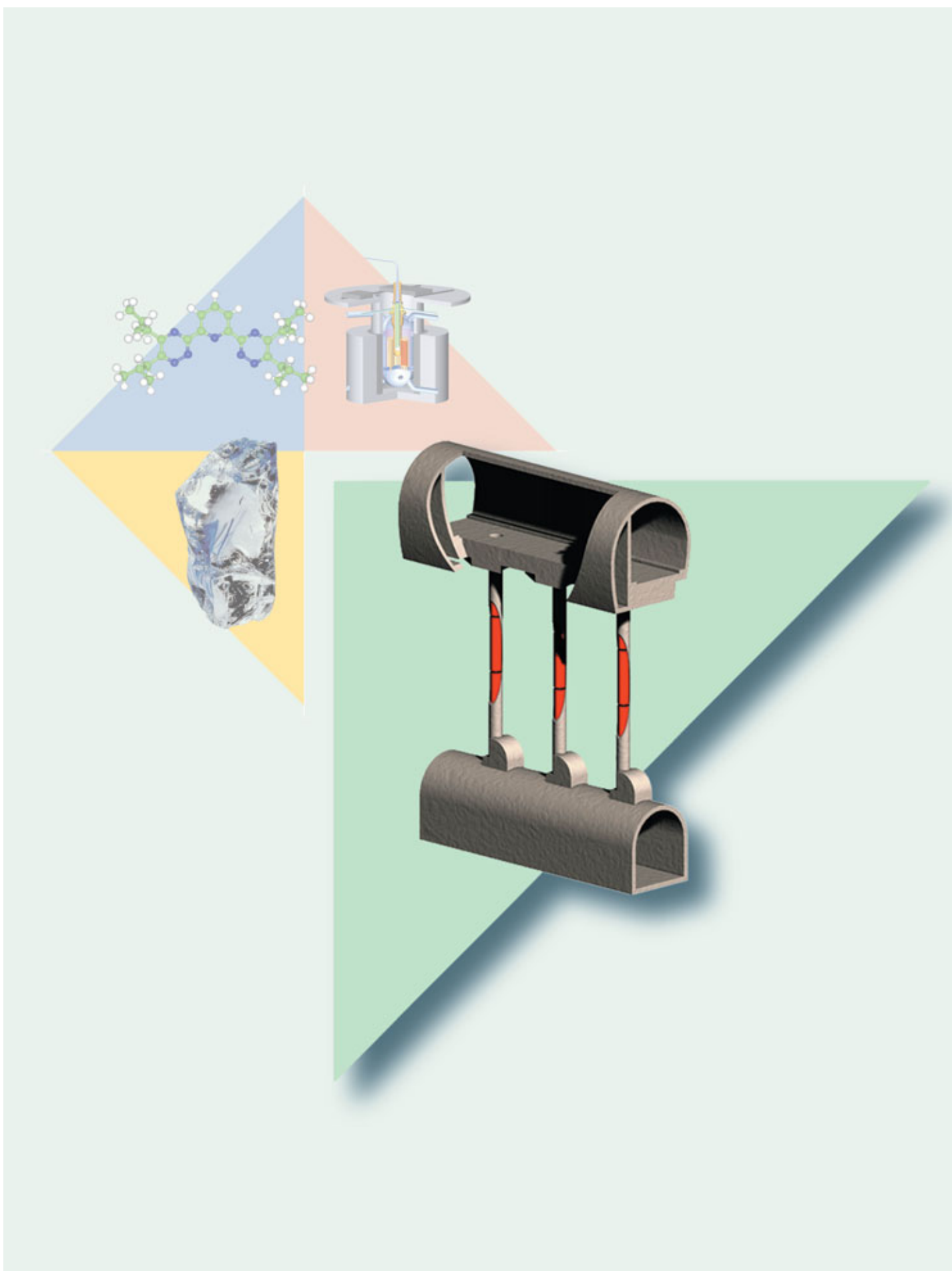




IV. STORAGE AND/OR DISPOSAL

Whatever the decisions taken on how spent fuel or its various components are to be reprocessed, storage and/or disposal are the only solutions for dealing with whatever is considered as waste, be it ultimate or otherwise. The golden rule in storage, which by definition is an interim solution meant to last a few centuries (up to 300 years), is that the waste packages (containers and waste) must remain perfectly intact and ready for retrieval at any time for reprocessing, reconditioning or transfer to deep and final disposal.

Practical solutions have been developed for the decision-makers to choose from that cover waste in all forms be it spent fuel packed as is, vitrified waste using the current “light” glass process, from which almost all the actinides have been extracted, radionuclides from “advanced separation” put into specific conditioning or even old, reconditioned waste. One of the outstanding tasks to achieve for the 2006 presentation deadline to the French Parliament is to produce blanket, then basic design concepts on which to base the relevant costings.

As research has developed dependable capacity to predict the long-term behavior of packages, these solutions can now be realistically assessed. This is particularly pregnant for deep geological disposal, for which case, given the lifespan of the elements implicated, it is a vital task. The main purpose of this research is to make very long-term behavior forecasts for different types of waste and how its “package” will develop in given environments. Since even wider safety margins are emerging from the exercise of analyzing the proposed solutions, it is turning the uncertainties to good account. Research workers have classified and analyzed these behavior mechanisms and can now give very-long-term radionuclide-containment guarantees. In the case of glass packages, which can be used to contain all kinds of elements, the time scale involved is in millions of years. The new ceramic matrices, “deluxe” packages for minute amounts of waste, for their part turn out to present 100 times greater water-solubility resistance!