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Waste Management in a Hot Laboratory of Japan Atomic Energy Agency – 1: Overview and Activities in Chemical Processing Facility

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Abstract : Chemical Processing Facility of Japan Atomic Energy Agency is a basic research field for advanced back-end technology developments with using actual high-level radioactive materials such as irradiated fuels from the fast reactor, high-level liquid waste from reprocessing plant. In the nature of a research facility, various kinds of chemical reagents have been offered for fundamental tests. Most of them were treated properly and stored in the liquid waste vessel equipped in the facility, but some were not treated and remained at the experimental space as a kind of legacy waste. It is required to treat the waste in safety. On the other hand, we formulated the Medium- and Long-Term Management Plan of Japan Atomic Energy Agency Facilities. This comprehensive plan considers Chemical Processing Facility as one of the facilities to be decommissioned. Even if the plan is executed, treatment of the “legacy” waste beforehand must be a necessary step for decommissioning operation. Under this circumstance, we launched a collaborative research project called the STRAD project, which stands for Systematic Treatment of Radioactive liquid waste for Decommissioning, in order to develop the treatment processes for wastes of the nuclear research facility. In this project, decomposition methods of chemicals causing a troublesome phenomenon such as corrosion and explosion have been developed and there is a prospect of their decomposition in the facility by simple method. And solidification of aqueous or organic liquid wastes after the decomposition has been studied by adding cement or coagulants. Furthermore, we treated experimental tools of various materials with making an effort to stabilize and to compact them before the package into the waste container. It is expected to decrease the number of transportation of the solid waste and widen the operation space. Some achievements of these studies will be shown in this paper. The project is expected to contribute beneficial waste management outcome that can be shared world widely.

Keywords : chemical processing facility, medium- and long-term management plan of JAEA facilities, STRAD project, treatment of radioactive waste
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