

Study on Measures to Strengthen the Fire Protection System of Sodium Experimental Facility

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Sodium(Na) used as a coolant in the SFR (Sodium-cooled Fast Reactor) has good physical and nuclear properties. Even though sodium has these excellent properties, its violent chemical reactivity with oxygen and water is a strong disadvantage to its use in the sodium experimental facility.

During the experiment an accidental sodium fire may be caused by leakage. In an event of sodium leakage, sodium combustion is accompanied by production of dense sodium aerosols which are harmful products to the human body. Therefore, it is necessary to establish fire protection system in case of leakage and the subsequent sodium fire. KAERI have made a framework for the system since sodium experiment started, which consists of 3 parts as follows.

1. [Leak detection part]
2. [Na-fire mitigation part]
3. [Na-fire extinguishing part]

The objective of this study is to investigate detailed functions of 3 parts and to present the measures to strengthen the entire system for the future sodium experiment.