

OVERVIEW OF SARNET ACTIVITIES IN THE SOURCE TERM AREA

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The SARNET Source Term topic harmonises the efforts of about twenty European organizations in the study of eighteen safety-related phenomena which may occur in a light water reactor severe accident, as identified in the EURSAFE PIRT. These are grouped into four areas:

- effect of air ingress: under such conditions, the fuel and its fission products (FPs) may oxidise. Some (especially the very radio-toxic ruthenium) may form highly volatile oxide species which may be released to the environment;
- iodine volatility in the Reactor Coolant System (RCS) : the impact of high temperature on FP behaviour is investigated to improve the predictability of iodine species exiting the RCS;
- aerosol behaviour: the main objective is to quantify the source term following steam generator tube rupture, which leads to containment by-pass; aerosol leakages through containment concrete wall cracks, interaction of deposited aerosols with the RCS substrate and revaporization phenomena are also studied.
- iodine behaviour in-containment: to improve the predictability of the various chemical and physical processes which control the iodine behaviour in both the gas and water phases.

All these phenomena are being studied through experimental programmes. Interpretation of these experiments is under way, leading to model development and improvement centred on the ASTEC code. An overview of these activities is presented.