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Abstract:	
<p data-bbox="315 608 1235 640">Emergency Radiochemical Analysis Methodology and Performance</p> <p data-bbox="315 683 1243 789">Environmental monitoring procedures have been introduced which are designed to provide a rapid response by the UK nuclear power generation industry in the event of a nuclear emergency.</p> <p data-bbox="315 836 1243 1017">The laboratory is now capable of screening up to 80 samples for total alpha and total beta activity within three hours of sample receipt. This screening is supplemented by gamma spectrometry measurements using a library which includes all predicted radionuclides having a half-life greater than approximately ten minutes.</p> <p data-bbox="315 1064 1243 1389">This rapid screening would enable identification of samples of particular interest. Radiochemical analytical methodology is in place which would then enable determination of transuranic radioisotopes and radiostrontium (⁸⁹Sr and ⁹⁰Sr) within a period of 24 hours from sample receipt to reporting results. The MDA achievable via this methodology is of the order of 10% of the CEC restriction level. Typically, the counting uncertainty associated with these measurements is in the range 10-50%. As such, this methodology is appropriate for the urgent provision of reassurance or informed advice in the event of radionuclide release.</p> <p data-bbox="315 1436 1243 1655">Improvements in batch analysis time have been achieved via the use of microwave enhanced sample digestion techniques, commercially available extraction resins, optimisation of conventional radiochemistry procedures and use of combined Cerenkov and triple channel liquid scintillation counting techniques. Sample calculation and management is facilitated by the computerised Laboratory Information Management System (LIMS).</p>	