

AN UPDATE OF THE EPRI BELOW REGULATORY CONCERN RESEARCH PROGRAM

P. J. Robinson
Electric Power Research Institute
Palo Alto, California 94303

J. N. Vance
Vance and Associates
Ruidoso, NM 88345

ABSTRACT

This paper provides an update of the EPRI Below Regulatory Concern (BRC) Research Program which is nearing completion. The purpose of this Research Program is to develop the technical information required to support the submittal of rulemaking petitions to exempt specific low-level waste streams from NRC licensed burial facilities. The waste streams addressed in the EPRI program are:

<u>PWR</u>	<u>BWR</u>
DAW	DAW
Oil	Oil
Sand/Soil	Sand/Soil
Secondary IX Resins	Sandblasting Grit

This paper describes the scope and content of the Research Program including the brief description of the research tasks executed by the EPRI contractors. Salient research results findings from several of the important program tasks are reported.

BACKGROUND

In August, 1986 the NRC issued a policy statement and implementation plan for the expeditious handling of rulemaking petitions to exempt very low activity waste streams from disposal at NRC licensed burial facilities. The policy statement indicated that the petitions should be developed on an industry-wide basis and should be waste stream-specific and waste disposal method-specific if expeditious handling of the petitions was desired. In response to the policy statement and at the request of several member utilities, EPRI initiated a Research Program to develop the technical bases in support of one or more rulemaking petitions to exempt specific low-level waste streams produced at nuclear power plants. The requirements for the BRC exemptions enunciated in the NRC Policy Statement imply a level of regulation by virtue of the waste characterization and the acceptable disposal methods which results in exemption levels above levels normally termed "de minimus." This exemption level is demonstrated in Fig. 1.

PROGRAM SCOPE

An initial study was conducted to identify all of the nuclear plant waste streams which contain very low activity levels and were, therefore, potential candidates for inclusion in the EPRI BRC Program. In the study, the waste streams were ranked, using a weighted evaluation system, from highest to lowest perceived benefit to the industry.

From this ranking, the following waste streams were selected for inclusion in the BRC Program:

PWR	BWR
DAW	DAW
Oil	Oi
Sand/Soil	Sand/Soil
Secondary IX Resins	Grit Blast

The NRC Policy Statement on BRC contained 14 decision criteria that the NRC would use in reaching a decision to approve a BRC rulemaking petition to exempt specific waste streams. Based on the decision criteria, the EPRI Research Program was constructed to provide the technical information to respond to each of the criteria. The EPRI BRC Program, as presently scoped, contains 14 research tasks (not necessarily one-to-one with the 14 decision criteria). Scopes of work were developed for each of the research tasks and budget estimates were made. The total BRC Program cost is budgeted at \$2.2M and is co-funded by 30 utilities and the Japanese Utility Research Organization.

PROGRAM CONTENT

The 14 research tasks and their interrelationships are shown in Fig. 2. The crosshatch blocks are the tasks which have been completed to date. The shaded blocks are the

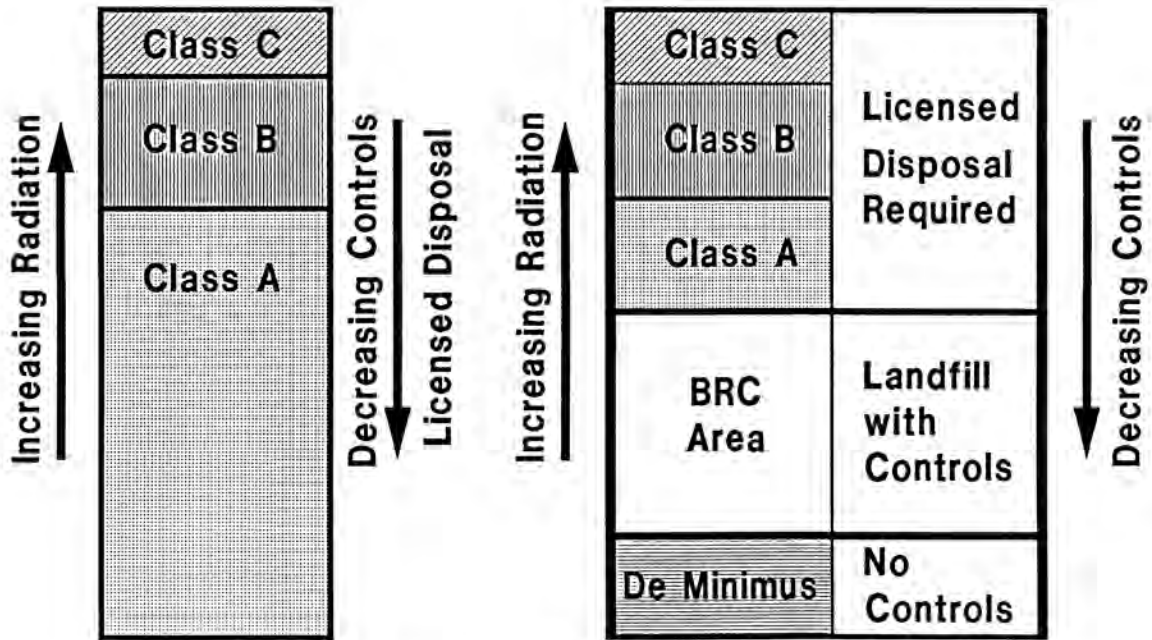


Fig. 1. Waste Disposal Current Regulations BRC Objective.

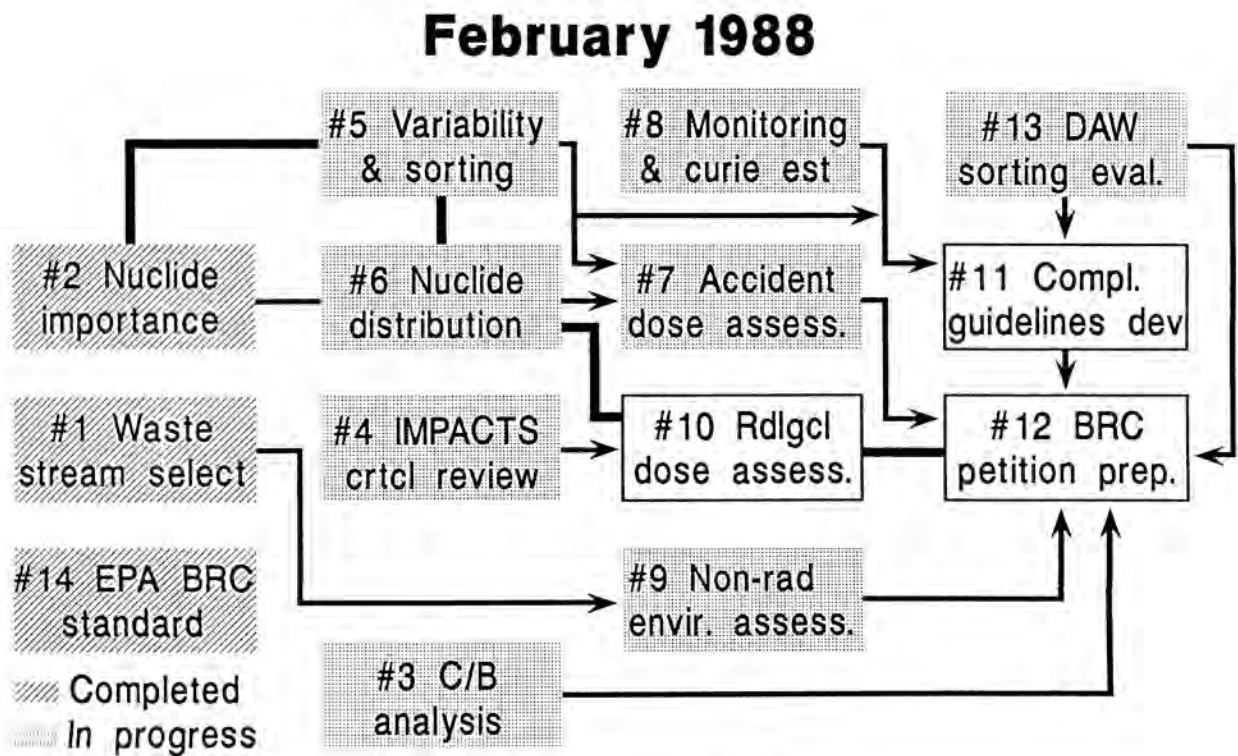


Fig. 2. BRC Research Tasks Flow Diagram.

tasks currently underway. The Program is being conducted on a multi-contractor basis. The contractors involved in the tasks which have been awarded are: Analytical Resources Inc., Battelle Northwest Laboratories, Envirosphere, National Nuclear Inc., Rogers & Associates, SAIC, Sargeant & Lundy, and Vance & Associates.

The NRC Policy Statement requires that the waste streams being petitioned for an exemption be adequately characterized relative to their radiological properties. The radiological characterization must address the expected variability in the radionuclide concentrations and nuclide spectra and are to be based on measurements of samples of the actual waste streams. The radiological properties are then used to perform dose assessment calculations for expected and unexpected releases or exposures.

A major portion of the BRC Research Program is aimed at the development of the radiological properties of the candidate BRC waste streams. Both gamma-emitting nuclides and non-gamma emitting nuclides are being measured in the waste stream samples. The sampling program originally developed included 6 PWRs and 5 BWRs. The plants were selected on the basis of Pu-239/Co-60 ratios in the 10CFR61 samples and current fuel performance data which provided an estimate of the quantity of exposed fuel in the reactor coolant system. However, because some of the selected plants did not have secondary side ion exchange resins nor soil, 6 additional plants were

included in the sampling program for these two waste streams.

The sampling program involves the collection of 1-2 liter samples of the oil, soil and ion exchange resin waste streams which are shipped to Battelle for gamma spectroscopy measurements of the gamma nuclides and radiochemistry measurements of the non-gamma nuclides. For DAW, at each plant 40-50 bags of DAW are sorted, using hand held friskers, into 9 contamination categories to examine the variability of activity on each piece of DAW. Each bag of DAW is counted in an NNC bag monitor to measure the total content of the material. The DAW material is then drummed and shipped to Battelle for measurement of the gamma and non-gamma nuclides. Table I shows the current status of the DAW sorting and the sampling effort in the program. Figure 3 shows a typical frequency histogram of DAW activity concentration for all plants included in the program. The frequency histograms will be analyzed to develop the expected activity distribution on DAW.

Figure 4 shows the Program schedule for all of the research tasks. The Research Program is approximately 60% complete with all but one research task underway. It is anticipated that the petition preparation will be complete by mid-summer of 1988, and we are expecting petition submissions by late summer or early fall.

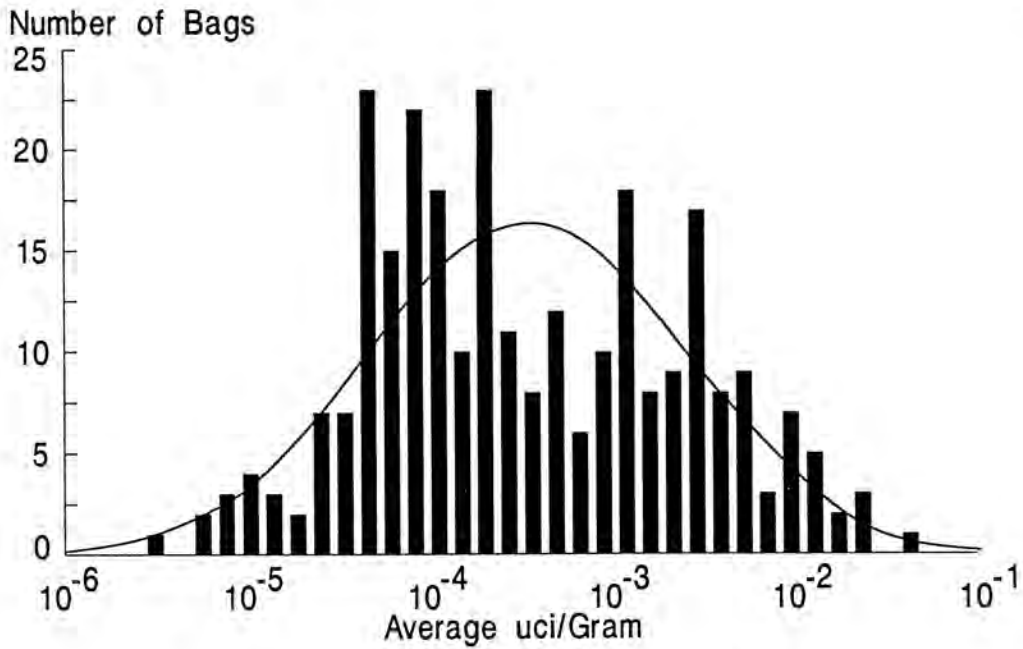


Fig. 3. BRC DAW Variability Data: All Plants.

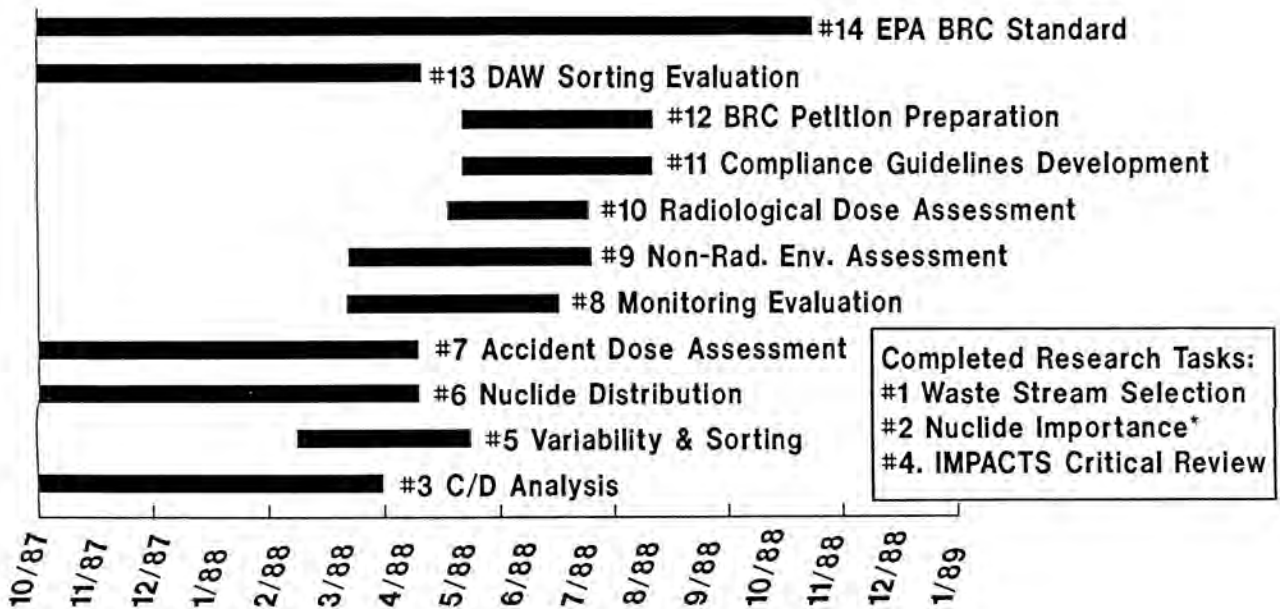


Fig. 4. BRC Research Schedule.