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SURROGATE WASTE STREAMS FOR USE IN MWFA FUNDED RESEARCH AND DEVELOPMENT

D. Gombert and S. Priebe, INEEL, Idaho Falls, ID
L. Borduin, LANL, Los Alamos, NM

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ABSTRACT

Researchers developing technologies for treatment of mixed (both hazardous and radioactive) wastes are strongly encouraged to test using materials representative of the wastes targeted by their processes. Using actual wastes is essential for treatability studies and demonstrations prior to implementation, but is excessively costly and impractical during development. Thus, it is a responsibility of the focus area to provide researchers with surrogate recipes for use in development. Data from tests with standardized recipes will also facilitate comparison of results for competing technologies by potential end users and industry. Due to the wide range of waste materials in the DOE inventory and the scope of technology covered by the focus area, no one surrogate will accurately represent all wastes in all applications. The surrogates described are based on generic base compositions representative of that class of wastes, with variable constituents to be added over a recommended test range. Not all of the additives must be tested for each technology; focus should be directed to the constituents and physical forms present in the waste streams targeted by the developer. Excluding some parameters, or reducing the parametric testing rather than using the full range of concentration recommended simply limits the scope of potential application when the data is considered by a potential user. Surrogates are described for debris, sludges, and caustic scrub solution. Soils are recognized as a fourth class, and are considered too complex to represent with a surrogate. Descriptive text is also included to explain how the recipes were developed, and why each test additive is prescribed.

INTRODUCTION

The Mixed Waste Focus Area (MWFA) directs the national research and development effort for treatment of mixed (both radioactive and hazardous) wastes for the Department of Energy (DOE). The MWFA strategy typically includes funding more than one concept for any given technology need for at least two reasons. First, unique requirements at different sites may make one concept more applicable than another. Second, not all technologies will be successfully developed, and multiple options ensure that some treatment will be available for all wastes. To support this strategy, it is imperative that comparable data is developed by the parallel research efforts such that users in the field can select the most appropriate technology, and the MWFA can allocate funding where it can be of greatest benefit. To this end, the MWFA has issued Test Plan Guidance, and will review proposed plans to maintain some commonality.