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**OAK RIDGE
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MARTIN MARIETTA

**Minutes of the Workshop
on Off-Site Release Criteria
for Contaminated Materials**

S. P. N. Singh

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Chemical Technology Division
Waste Management Technology Center

MINUTES OF THE
WORKSHOP ON OFF-SITE RELEASE CRITERIA
FOR CONTAMINATED MATERIALS

Suman P. N. Singh

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LIST OF ACRONYMS

AEC	U.S. Atomic Energy Commission
ALARA	As Low As Reasonably Achievable
ANL	Argonne National Laboratory
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
BRC	Below Regulatory Concern
CFR	Code of Federal Regulations
CWM	Chemical Waste Management, Inc.
D&D	Decommissioning and Decontamination
DRH	Department of Radiological Health
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
HQ	Headquarters
IAEA	International Atomic Energy Agency
MMES	Martin Marietta Energy Systems, Inc. (Energy Systems)
NCRP	National Council on Radiation Protection and Measurements
NRC	U.S. Nuclear Regulatory Commission
ORAU	Oak Ridge Associated Universities
ORGDP	Oak Ridge Gaseous Diffusion Plant
ORNL	Oak Ridge National Laboratory
ORO	Oak Ridge Operations
PGDP	Paducah Gaseous Diffusion Plant
PNL	Pacific Northwest Laboratory

R.G. Regulatory guide
TDHE Tennessee Department of Health and Environment
UMTRAP Uranium Mill Tailings Remedial Action Program
WMTC Waste Management Technology Center

PREFACE

This report summarizes the *Minutes of the Workshop on Off-Site Release Criteria for Contaminated Materials* held May 2-3, 1989, at the Pollard Auditorium in Oak Ridge, Tennessee. The views expressed in the minutes are those of the speakers and the technical reporters and do not necessarily reflect the positions of the United States Department of Energy or Martin Marietta Energy Systems, Inc.

Since the preparation of the draft report on the workshop held on May 31, 1989, several activities have occurred (as a result of the workshop) leading to the initiation of the development of the release criteria for contaminated materials. These activities are summarized by E. S. McDougald and are given in the foreword to the report. The timing and the potential impact of the post-workshop events on the development of the release criteria necessitated that they be included in the workshop minutes.

FOREWORD

E. S. McDougald

Martin Marietta Energy Systems, Inc.

As a direct fallout of the Workshop on Off-Site Release Criteria for Contaminated Materials, E. S. (Beth) McDougald from Martin Marietta Energy Systems, Inc., and W. E. (Bill) Kennedy from Pacific Northwest Laboratory had a meeting with the Department of Energy-Headquarters (DOE/HQ) on August 1, 1989 in Washington, DC, to present a synopsis of the workshop. A précis of the meeting is given below.

The meeting was held to apprise DOE/HQ staff of the collective concerns expressed at the workshop by the staff of the DOE sites regarding the lack of guidance for the unrestricted release of materials with very low levels of radioactive contamination and to formulate an action plan to address these concerns. The other attendees at the meeting included Cynthia Anderson (DOE/Savannah River Plant), Bob Baker (Energetics), Dick Bidel (DOE), Tom Frangos (DOE), Kathy Gibney (PNL - special assignment to DOE), Stan Noiter (PNL), and Andy Wallo (DOE/UMTRAP). John Tseng (DOE/HQ), who had actually requested the input from the workshop, was unfortunately unable to attend. However, he was represented by Ray Pelletier (DOE/HQ).

The meeting opened with a recount of the workshop proceedings which included the following topics:

- A review of the complexity of specific situations concerning the release of materials which are slightly contaminated (or suspected of being slightly contaminated) with radioactive components.
- The concerns related to the potential releases including uncertainty with regard to internal and bulk contamination, long-term liability issues, the disposition of D&D byproducts, treatment of mixed wastes, and the impact of land disposal restrictions on the disposal of the above wastes.
- A review of the current practices for determining the final disposition of the materials of concern. The reviews included a summary of the obsolete and inappropriate regulatory guidelines used to justify certain decisions and resulting activities. This review was performed to demonstrate the variety and lack of consistency used in making disposal decisions DOE-wide regarding the disposition of radioactively contaminated materials.
- The root problems were perceived to be costs, lack of de minimus or BRC values, absence of guidelines for bulk/mass contamination, limited instrument detection capabilities, and

the lack of consistency in determining statistically significant volumes for sampling.

A list of action items was then presented. These were based on the suggestions from the workshop participants. It was felt that DOE/HQ should take the lead and, working with the DOE sites, develop the criteria for the off-site release of radioactively contaminated materials from the sites. The steps envisaged in achieving this objective are as follows:

- Inventory the DOE wastes and target radioisotopes not addressed under Regulatory Guide 1.86.
- Establish BRC values for various radionuclides for other than surface contamination.
- Establish and justify a risk/dose-based release standard.
- Research commercially available radiation detection instrumentation that meets DOE's needs.
- Develop an inventory of release criteria models in current use.
- Define all pragmatic scenarios for the disposition of radioactive contaminated materials.
- Review modeling methodology for translating primary dose guidance for unrestricted release to bulk and surface contamination concentration limits.
- Identify a modeling method for application to specific scenarios.
- Obtain peer review of methodology, models, and the release criteria from ANSI, ASTM, or other recognized standard-setting body.
- Develop sampling protocols and measuring and monitoring techniques for the radioactive contaminants.
- Subject the entire technical package to external review and acceptance by regulatory agencies such as EPA and NRC.
- Revise and issue DOE Order 5400.XX based on the results of the above analysis and review.

The general tone of the response by DOE/HQ representatives was one of surprise. The problems presented were seen not so much as different aspects of one major and critical need for information, but rather as independent issues, some of which, it was suspected, had already been

addressed in documented decisions (e.g., cleanup criteria). Concern was expressed that there are probably no funds identified in the DOE Five-Year Plan for dealing with these issues. On the whole, there seemed to be recognition that DOE cannot afford to wait for other federal agencies to develop and promulgate acceptable criteria for DOE's use. Questions asked by DOE/HQ included the following:

1. How many sets of criteria are needed?
2. What are the priorities?
3. What are the technical issues and needs?

DOE expressed an interest in seeing a "strawman" proposal to address the issues, but concluded that discussion was needed to determine just what should be included and what deadline should be applied. The warning was issued that there was no guarantee that DOE through its rulemaking process would take any less time than EPA or NRC in the official adoption of release limits. However, it was admitted that the development of a comprehensive technical package could influence the decisions made by either regulatory body.

The meeting ended with the agreement that more discussions needed to be held between DOE/HQ, Martin Marietta Energy Systems, Inc., and Pacific Northwest Laboratory to develop the action plan.

Anyway one looks at it, the establishment of rational release criteria for contaminated materials appears to be a long, arduous process that requires the sustained efforts of all affected parties (DOE sites and support contractors) under the leadership of DOE/HQ.

The workshop described in this report proved to be the necessary first step in focusing on this issue.

EXECUTIVE SUMMARY

A one and one-half-day workshop was convened on May 2-3, 1989, at the Pollard Auditorium in Oak Ridge, Tennessee, to discuss the subject of off-site release criteria for contaminated materials. Seventy-two people attended the workshop. The attendees were mainly from the U.S. Department of Energy (DOE) facilities faced with managing contaminated materials, but also included experts from industry and the regulatory agencies. The goal of the workshop was to develop strategy for the development of reasonable release criteria for slightly radioactively contaminated materials for disposal off-site. Some but not all of these materials are currently being generated and stored at DOE sites as a result of decommissioning and decontamination (D&D) operations.

The workshop agenda is given in Table 1. The workshop consisted of six opening presentations germane to the subject, and a brief panel discussion followed. Four topical sessions were held during the afternoon of the first day to allow the participants to examine the issues in depth. The four topical sessions were entitled: (1) Problem Scope, (2) Regulatory Issues, (3) Decontamination Technologies, and (4) Strategic Options. A summary session was held the next morning to allow the participants to assimilate the various components of the workshop. At the summary session, the chairperson for the four topical sessions summarized the discussions at their sessions, and then the floor was opened to the participants to further debate the issues.

The workshop adjourned with the unanimous agreement that there is an urgent need to develop reasonable release criteria, and a plan was developed for DOE to undertake the development of these criteria working with other regulatory and standards-setting bodies such as the Nuclear Regulatory Commission (NRC), the Environmental Protection Agency (EPA), the American National Standards Institute (ANSI), the National Council of Radiation Protection (NCRP), and the American Society for Testing and Materials (ASTM).

The author is grateful to many connected with the workshop. This includes all the speakers, the chairpersons and the technical reporters for the topical sessions, the workshop sponsors, and the participants. They all took the time to participate in the workshop and to focus on the issue of developing reasonable release criteria for the off-site release of contaminated materials. This is an area of ever-increasing importance to DOE as old nuclear processing facilities are retired and the scrap materials have to be disposed cost effectively, yet in compliance with all environmental protection regulations.

Last, but not least, the author is indebted to all those involved with the administrative details of arranging and conducting the Workshop. A partial list of these people include Carol Proaps, Bonnie Reesor and her staff, Debbie Brown, Lisa Hunt, Jerry King, and Marier Piper. Without their unstinting assistance, the workshop would not have turned out as well as it did.

MINUTES OF THE
WORKSHOP ON OFF-SITE RELEASE CRITERIA
FOR CONTAMINATED MATERIALS

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ABSTRACT

A one and one-half-day workshop was held May 2-3, 1989, at the Pollard Auditorium in Oak Ridge, Tennessee, with the objective of formulating a strategy for developing reasonable and uniform criteria for releasing radioactively contaminated materials from the U.S. Department of Energy (DOE) sites. This report contains the minutes of the workshop.

At the conclusion of the workshop, a plan was formulated to facilitate the development of the above-mentioned off-site release criteria.

1. INTRODUCTION

The one and one-half-day workshop on the Off-Site Release Criteria for Contaminated Materials was held May 2-3, 1989, at the Pollard Auditorium in Oak Ridge, Tennessee. The objective of the workshop was to formulate a strategy for developing reasonable and uniform criteria for releasing radioactively contaminated materials from the United States Department of Energy (DOE) sites. The subject materials include slightly contaminated excess equipment, scrap metals, oils, and solvents that are no longer required at the DOE sites and need to be disposed.

The workshop was attended by 72 representatives, most of whom were from the DOE sites faced with managing the contaminated materials, along with experts from industry and the regulatory agencies. The workshop agenda is given in Table 1, and the list of attendees is given in Appendix A.

The workshop was organized by the Oak Ridge National Laboratory's Waste Management Technology Center (WMTC) for the Environmental and Safety Activities Division, Martin Marietta Energy Systems, Inc., (Energy Systems). The DOE Oak Ridge Operations Office (DOE/ORO), and the DOE Waste Operating Contractors Committee sponsored the workshop.

A summary of the workshop proceedings is given in the following sections.

2. OPENING PRESENTATIONS

2.1 WELCOMING REMARKS BY L. J. (LANCE) MEZGA, MARTIN MARIETTA ENERGY SYSTEMS, INC.

- o Lance Mezga did not use slides or viewgraphs for his talk.
- o He called the meeting to order and welcomed the workshop attendees.
- o Lance stated the following items:
 - reason for having the workshop, namely, DOE has problems managing the aforementioned materials;
 - need to know what criteria are presently used for disposal of hazardous wastes that are designated as mixed wastes because of detectable levels of radioactive contamination;
 - the theme for the workshop; and
 - the proposed agenda for the workshop.
- o He served as the chairperson for the workshop and introduced the speakers.

2.2 NATURE AND MAGNITUDE OF THE PROBLEM BY W. R. (WAYNE) HANSEN, LOS ALAMOS NATIONAL LABORATORY

- o A copy of the viewgraphs used by Wayne Hansen for his talk is given in Appendix B.
- o Wayne's talk focused on the following issues:
 - the need for establishing criteria for releasing materials for recycle or disposal that contain radioactive components, such as scrap metals and organics; and

Table 1. Agenda for the Off-Site Release Criteria for
Contaminated Materials Workshop

Tuesday, May 2, 1989

Registration	WMTIC Staff
Welcoming Remarks	L. J. Mezga
Nature and Magnitude of Problems	W. R. Hansen
Regulatory Issues	R. E. Alexander
DOE Order 5400.XX Impact	J. C. Tseng
Break	
Current Industry Practices	P. K. Jackson
Chemical Wastes Acceptance Criteria	J. B. Buckley
Modeling Studies to Develop Release Criteria	W. E. Kennedy, Jr.
Panel Session	
Lunch	
TOPICAL SESSIONS	
Problem Scope	W. R. Hansen ^a /E. S. McDougald ^b
Regulatory Issues	R. E. Alexander/R. J. Keeling
Decontamination Technologies	P. K. Jackson/J. M. Kennerly
Strategic Options	W. E. Kennedy/R. L. Jolley

Break

Topical Sessions - continued

Wednesday, May 3, 1989

Workshop Reconvenes

Summary Session

Workshop Adjourns

^aSession Chairperson.

^bTechnical Reporter.

- a brief description of how the DOE programs that have contaminated materials are impacted by the lack of suitable release criteria, and examples of how some of the DOE programs have dealt with the release of the contaminated materials.
- o A summary of Wayne's talk can be gleaned from his viewgraphs given in Appendix B.

2.3 REGULATORY ISSUES BY R. E. (BOB) ALEXANDER,
NUCLEAR REGULATORY COMMISSION (RETIRED)

- o Bob Alexander used several slides and viewgraphs in his talk; however, paper copies were not available for inclusion in the minutes.
- o Bob gave an overview talk and touched on the following issues:
 - the high costs of cleaning contaminated materials to meet currently accepted residual radioactivity criteria;
 - the distinctions between Below Regulatory Concern (BRC), de minimus, As Low As Reasonably Achievable (ALARA), and unacceptable risk level release criteria;
 - current procedures used by federal agencies for developing regulatory standards and federal guidance for release of contaminated materials;
 - risks from low-level radioactivity and the perception of this risk by legislators, the public, news media, and the regulators;
 - standards making and the Nuclear Regulatory Commission's (NRC's) petition process and DOE adoption of NRC standards; and
 - historical perspective of the biotoxicity of residual radioactivity relative to workers, e.g., radium dial painters and uranium mine workers.
- o Bob exhorted the attendees to plan and act toward developing reasonable release criteria for contaminated materials.

2.4 IMPACT OF DOE ORDER 5400.XX BY J. C. (JOHN) TSENG,
U.S. DEPARTMENT OF ENERGY, OFFICE OF ENVIRONMENT, SAFETY, AND
HEALTH

- o John Tseng did not use slides or viewgraphs for his talk.
- o His talk focused on DOE Order 5400.XX, entitled "Radiation Protection of the Public and the Environment," related to the release criteria for contaminated materials. He covered the following topics:
 - DOE's position on establishing radiation protection standards for public exposure (DOE Order 5400.XX), based on recommendations from international and national standard-setting organizations or standards and guidance established by the NRC and EPA;
 - DOE/Office of Environment, Safety, and Health's rationale for choosing the release criteria given in draft DOE Order 5400.XX;
 - Office of Environment, Safety, and Health's position on finalizing Order 5400.XX as proposed; and
 - DOE's interactions with NRC and U.S. Environmental Protection Agency (EPA) on developing criteria for residual radioactivity.
- o DOE/HQ is seeking staff to work with EPA and NRC to develop acceptable release criteria for contaminated materials.

2.5 CURRENT INDUSTRY PRACTICES BY P. K. (KEN) JACKSON,
BECHTEL NATIONAL, INC.

- o A copy of Ken Jackson's viewgraphs is given in Appendix C.
- o Ken gave brief descriptions and potential applications of current technologies for cleaning radioactively contaminated materials. The technologies discussed include the following:
 - high pressure water,
 - ultra-high pressure water,
 - abrasive blast,
 - liquid abrasive blast,
 - freon cleaning,

- chemical methods, and
- melt technology.
- o Ken indicated that there is no established release criteria and there is an urgent need to develop these criteria for releasing contaminated materials.
- o A summary of Ken's talk can be gleaned from the copy of his viewgraphs in Appendix C.

2.6 CHEMICAL WASTES ACCEPTANCE CRITERIA BY J. B. (JIM) BUCKLEY, CHEMICAL WASTE MANAGEMENT, INC.

- o Jim Buckley used slides of the Chemical Waste Management's (CWM's) facility at Emelle, Alabama, in his talk. In addition, he had a handout titled "The EPA Hazardous Waste Code List and Restrictions, 40 CFR Part 261, Subparts C and D." A copy of the handout is given in Appendix D.
- o Jim's talk primarily consisted of an overview of the hazardous waste treatment, storage, and disposal facilities at Chemical Waste Management's Emelle, Alabama, site. In addition, he discussed the following items:
 - CWM's Emelle facility does not accept radioactively contaminated wastes.
 - CWM is a subsidiary of Waste Management, Inc., which has other organizations and facilities, such as Chem-Nuclear in Barnwell, South Carolina, for handling radioactively contaminated wastes.
 - Emelle uses U.S. Department of Transportation (DOT) regulation 49 CFR 173.403 to define radioactively contaminated wastes. This criterion states that if the wastes have a specific activity $>0.002 \mu\text{Ci/g}$, they are considered radioactively contaminated. This limit is employed for the purpose of characterizing the waste. However, CWM's corporate policy dictates that any material submitted for disposal at Emelle that exhibits radioactivity above background levels must be reviewed by CWM and Chem-Nuclear before acceptance for disposal.

- At Emelle, CWM has facilities for transporting, treating, and disposing of hazardous and toxic wastes, but they do not have an incinerator.

2.7 MODELING STUDIES TO DEVELOP RELEASE CRITERIA,
BY W. E. (BILL) KENNEDY, JR.,
BATTELLE PACIFIC NORTHWEST LABORATORY

- o Copies of the viewgraphs used by Bill Kennedy are given in Appendix E.
- o Bill gave a brief overview of the modeling studies conducted by various organizations such as NRC, International Atomic Energy Agency (IAEA), and others to arrive at radiological release criteria for contaminated materials.
- o The gist of Bill's talk can be obtained from the viewgraphs he used. A copy is given in Appendix E.
- o Bill concluded that it is desirable to have a consistent, international approach to developing radiological release criteria for contaminated materials. However, he believed that release criteria derived through modeling efforts alone may prove to be impractical for radiation detection or for cost reasons. He suggested that DOE:
 - approach NRC to set guidance for unrestricted release of contaminated materials, and
 - develop a review of the modeling methods for deriving the release criteria.

3. PANEL SESSION

The panel session was abbreviated because of the addition of John Tseng's (DOE/HQ) talk and because the speakers used more than their allocated time.

The panel session was rather sedate. The workshop audience asked the speakers a few questions on the information they had presented in their talks. Bob Alexander asked most of the questions during the panel session. He asked Jim Buckley about the waste acceptance criteria used at CWM's Emelle facility, and he asked Ken Jackson about melt technology

for removal of radioactive contaminants. Bill Kennedy was asked to clarify some results he had shown during his presentation. The meeting then adjourned for lunch.

4. TOPICAL SESSIONS

4.1 PROBLEM SCOPE

- o The session was chaired by Wayne Hansen, and E. S. (Beth) McDougald was the technical reporter.
- o The participants included Alec Guilliams and John Flake from Savannah River Site and Karen Balo from Los Alamos National Laboratory.
- o The session focused on the nature and the magnitude of the disposal problems at DOE sites. The major issues examined included:
 - detection limits given in DOE Order 5400.XX;
 - release criteria used by various federal agencies, such as DOT and the establishment of de facto de minimus values;
 - difficulty of monitoring internal contamination of some types of equipment, such as pipes and of variable surfaces;
 - instrument detection capabilities;
 - waste management and liability issues;
 - decontamination treatment limits;
 - costs/benefits analyses for decontamination activities;
 - cross contamination of "cold" (as opposed to "hot") items;
 - and
 - other drivers for setting release criteria such as DOE Order 5820.2A, waste minimization, and waste recycle.
- o The group came to the following conclusions:
 - DOE/HQ should fund development of new instrumentation to permit accurate measurement of radioactive contamination,
 - there is a need to establish BRC values for various radionuclides for other than surface contamination,

- a study should be performed to determine what instrumentation is commercially available for beta- and gamma-radiation detection and see if it meets DOE needs.

4.2 REGULATORY ISSUES

- o The session was chaired by Bob Alexander, and Rick Keeling was the technical reporter.
- o A summary of the topical session prepared by Rick Keeling follows:

Two questions were posed to Bob Alexander before the session:

1. What regulations presently affect off-site release of contaminated materials?

Bob responded that basically all that is currently used is AEC Regulatory Guide 1.86, "Termination of Operating Licenses for Nuclear Reactors," for surface contamination limits and an NRC technical paper (SECY-81-576) on contaminated soils. Neither document is specific for DOE facilities, but these are all that currently exist.

2. If these regulations are applied to DOE facilities, are they applicable to DOE waste streams, are the criteria realistic, and do they ultimately ensure protection of human health and environment?

After mixed discussion with the audience, no clear answers were defined.

Bob approached the session with the format of general history in relation to his personal experience with the regulations and how the regulations are implemented on the state, federal, and international levels. Representatives from the Tennessee Department of Health and Environment commented on the use of Regulatory Guide 1.86 for surface contamination. They also questioned the applicability of using Regulatory Guide 1.86 for off-site release at non-reactor sites.

On the federal level, DOE raised the same concerns, plus the ability to manage the material, which is now regarded as

being contaminated based on Regulatory Guide 1.86. Disposal of contaminated scrap metal is a problem, and current disposal space at facilities is dwindling quickly. It does not seem feasible to continue managing all "suspect" contaminated waste as contaminated.

In the international arena, debate between Europe and the United States continues on what dose levels need to be set for Below Regulatory Concern (BRC). Based on IAEA guidance given in Safety Series No. 89, entitled "Principles for the Exemption of Radiation Sources and Practices from Regulatory Control," Europe and several other nations have adopted 1 mrem/year, while the United States is generally supporting 4 to 10 mrem/year. Issues on how to factor costs and benefits into the development of an acceptable level were also raised.

4.3 DECONTAMINATION TECHNOLOGIES

- o The session was chaired by Ken Jackson, and John Kennerly was the technical reporter.
- o The list of participants in this session is given in Table 2.
- o Given below is a summary of the session prepared by Ken Jackson and John Kennerly.

Of the available technologies, the greatest interest was shown in melt technology for metals release. This is understandable, in view of the large quantities involved in the scrap metal program and future decontamination and decommissioning (D&D) projects at various DOE facilities. It should be noted that the group came to the agreement that melt processes are decontamination rather than dilution operations. Along that line, it was also recognized that to melt surface-contaminated materials could aggravate the situation. Therefore, one should do a surface decontamination before the melt.

Experience has shown that in some instances, for example, in the case of nickel melts, the contamination penetrates the liners. The induction process has not experienced this specific problem; however,

the presence of fluxes can cause it. Because melting of various base metals must be separate evolutions, a careful initial characterization is necessary for both the base metals and the contaminants present.

Table 2. List of Participants Attending the Decontamination Technologies Topical Session

Name	Affiliation
John M. Kennerly	WMTC/MMES
W. N. Whinnery	Paducah Gaseous Diffusion Plant
Trent Griffin	Paducah Gaseous Diffusion Plant
Larry Barnett	ETE Consulting Engineers
Julius Foster	Consulting engineer - H&R Technical
B. V. Wojtowicz	ORGDP/MMES
Bill Strunk	MMES
D. S. Pesce	H&R Technical Associates
Jennings Cline	Y-12/MMES
Sam Senatore	Theta Technologies Consultant
Charley Yu	Argonne National Laboratory
Jas Devgun	Argonne National Laboratory
Ken Jackson	Bechtel National, Inc.

When analyzing the post-melt materials, coring and compositing have been used. A protocol should be established for ingot sampling and analysis. Again, samples to date indicate homogeneous mix throughout the ingot. However, some trend for contaminants to migrate toward the surface in cooling has been noted. When thinking of analyses and release, we should bear in mind that reasonable criteria are essential. A case in point is the question of why the criteria for the DOE scrap metal program conducted at K-25 in 1985 and 1986 was in the 1- to 2-ppb uranium range, when off-the-shelf aluminum wrap contains up to 9 ppm uranium. The above-mentioned range is related to rates acceptable in Europe for the scrap material and is based on technetium for which 1- to 2-ppb equates roughly with 18 pCi/g. Note that no comparable criteria exist in the United States.

If one thinks of the different metals to be decontaminated, it is seen that not all readily lend themselves to melting for release.

Surface contaminants could, perhaps, better be removed by surface decontamination techniques. Further, it may well be that not all the metal needs to be decontaminated, and careful characterization could easily result in release (without processing) of significant quantities of metals.

For structure and equipment decontamination, an in situ decontamination approach is often better and more cost effective. In some instances, verification surveys would be a problem. For piping systems, high-pressure water decontamination with self-traveling "mole" nozzle is quite effective. If contaminants are more tightly adherent, chemical use may be warranted. Most surface decontamination techniques described in the morning session would damage materials like transite rather than decontaminate them.

For decontamination of concrete surfaces, as would be necessary for the K-25 D&D program, an ultra-high pressure spray unit with attached vacuum shrouds overhead is ideal. This minimizes potential airborne contamination. Industry experience with this arrangement has been that one can operate without respirators in this configuration. Generally, contaminants only slightly penetrate surfaces, and removal of that surface layer permits release of the remaining materials. Again, the need for characterization accuracy is evident.

The feasibility of modifying existing equipment for unique applications was discussed. It was noted that the evolution of equipment followed just that process. The addition of vacuum shrouds would minimize or eliminate airborne contamination during decontamination operations. The use of robotics and remote technology also can improve efficiency, as well as reduce risks to operating personnel. Addition of effectors, i.e., spray nozzles, would speed operations.

A major preparatory step for decontamination operations is thorough training of operators and careful selection of proper safety equipment. Most decontamination processes have considerable potential hazards associated, and it is very important for worker safety to be addressed throughout planning and operations in D&D programs.

In the planning phase, one should also be aware of the dependence of most technologies on material/equipment shape and system configurations. Irregularly shaped items are very difficult to decontaminate.

The use of a Freon decontamination system is relatively common in the commercial industry. It is especially good on rubbers, hose, and insulation. It can also do a very good job on electrical equipment without adversely affecting it. This technique is normally applied in closed glove box-like assemblies. Contaminants are taken up by the freon and released during the distillation process.

In conclusion, the group determined that:

1. New, more reasonable release criteria of programs are needed. They should more accurately reflect natural constituents in materials available as "nonradioactive" common-use items. Official adoption of BRC/de minimus would be helpful.
2. A release criteria for homogeneous materials, based on mass, must be developed soon to permit effective implementation of D&D programs, i.e., a "bulk" related release criteria.
3. Current decontamination technologies can achieve most goals and can be modified for increased effectiveness and worker safety.
4. A careful evaluation of options is required for D&D efforts, to select and utilize the best approach and sequence to ensure successful completion of the project.
5. Pre-work characterization is essential. Careful efforts in this area will save problems throughout a D&D program. It will greatly reduce the amount of time and money spent by not having been able to select the correct sequence of events/operations.
6. Protocol must be established for monitoring on a "bulk" standard, i.e., surveys for release of internally contaminated items.

4.4 STRATEGIC OPTIONS

- o The session was chaired by Bill Kennedy, and Bob Jolley was the technical reporter.

- o The list of participants attending this session is given in Table 3.
- o The goal of this session was to identify and discuss alternative strategies for developing surface and bulk activity standards with a view of providing input to future DOE/EPA/NRC discussions leading to the development of reasoned off-site release criteria.
- o The plan for this session was to review the current status, develop and review alternative strategies, and prepare recommendations from the group for the larger workshop audience.
- o The recommendations from this topical session are as follows:
 - DOE should approach NRC to set guidance for unrestricted release to the public of radioactively contaminated materials in the suggested range of 1 to 10 mrem/year.
 - DOE should approach a national standards committee (e.g., ASTM, ANSI) to approve the modeling methods for deriving the secondary standards for unrestricted release to the public in terms of bulk and surface activity concentration limits for various practices.
 - DOE should develop a review of modeling methodology for translating primary unrestricted release dose guidance to bulk and surface concentration limits for various practices.

Table 3. List of Participants Attending the Strategic Options
Topical Session

Name	Affiliation
Robert L. Jolley	WMTC/MMES
E. Walker	Bechtel National, Inc.
Angel L. Rivera	Oak Ridge National Laboratory
D. W. Lee	Oak Ridge National Laboratory
J. C. Bailey	Norway Associates, Inc.
W. R. McDonnell	Westinghouse-Savannah River
M. V. Davis	EG&G, Idaho
L. T. Cole	EG&G, Idaho
F. R. O'Donnell	Oak Ridge National Laboratory
C. D. Massey	Oak Ridge National Laboratory
J. M. Williford	Chemrad Corp.
G. A. Whitney	Westinghouse-Hanford
J. P. Gonsky	Westinghouse-Hanford
Ken Lawver	DOE-Weldon Springs Site
Darrell L. Daugherty	Y-12/MMES
M. I. Morris	WMTC/MMES
Charley Yu	Argonne National Laboratory
Jas Devgun	Argonne National Laboratory
Jim Berger	Oak Ridge Assoc. Universities
Mark A. Smith	Oak Ridge National Laboratory
Debra G. Shults	TDHE/DRH
W. E. Kennedy, Jr.	Pacific Northwest Laboratory

5. SUMMARY SESSION

- o The summary session was chaired by Lance Mezga.
- o Lance made the following opening remarks:
 - He hoped that the summary session would help develop a sense of the workshop.
 - He believed that the workshop had been beneficial and that the resulting recommendations would help in determining the steps toward the development of acceptable release criteria for contaminated materials;
 - The session would consist of brief summaries to be given by the chairpersons of each session, followed by an open discussion among the workshop participants.
 - He asked Wayne Hansen to present a summary of the Problem Scope topical session.

5.1 SUMMARY OF PROBLEM SCOPE SESSION BY WAYNE HANSEN

- o Wayne Hansen made the following remarks:
 - Participants believed that they knew the scope of the problem, and they wanted solutions. Unfortunately, there are no ready answers.
 - The two main issues were: instrumentation detection capabilities and mixed wastes.
 - The instrumentation capabilities discussion consisted of reviewing capabilities for detecting surface and internal contamination, confidence limits with respect to instrument capabilities, the need for developing new (hopefully, portable) instruments, especially for monitoring alpha emitters, the question of health physics concerns with respect to suspect materials, and the application of the limits to DOE Order 5820.2A.
 - The mixed wastes discussion focused on concerns about materials being sent off-site, liability issues, concerns related to using DOT limits as de facto de minimus release

limits, the need to develop BRC values for uranium, lead, etc., that occur in trace quantities in solvents and oils, and concerns about the influence of RCRA land bans on the volumes of mixed wastes and available storage capacity.

- o Wayne stated that the group had the following recommendations:
 - DOE may have to consider funding instrument development, especially with regard to alpha emitters and to problems unique to the DOE facilities.
 - DOE needs to develop guidance/procedures on statistical methods and setting confidence limits.
 - There is an urgent need for developing BRC limits for radionuclides.
 - DOE needs to develop guidance similar to 5400.XX (the group called it 5400.YY) for the release of chemicals.

5.2 SUMMARY OF REGULATORY ISSUES SESSION BY BOB ALEXANDER

- o Bob Alexander made the following remarks:
 - The session looked at the need for radiological release criteria from the state, federal, and international viewpoints.
 - We (the United States) do not have complete radiological release criteria. However, EPA has accepted the challenge to establish such criteria in connection with the new federal guidance for protection of the public. The new criteria will likely be in terms of annual dose limits only, and it will be many years before these criteria will appear.
 - There is an urgent need for interim criteria (namely, the annual dose and associated contamination levels) until the above-mentioned guidance appears.
 - DOE appears to be the only organization that can fund the development of these criteria.
- o Bob indicated potential routes for developing the release criteria, such as the National Consensus Standards process, asking NCRP to develop the guidance, and using the NRC "fast-track" petition process. He favors using the petition process

as the best way to get the criteria developed.

- o Bob also said that the workshop is a good starting point for developing the needed release criteria.

5.3 SUMMARY OF DECONTAMINATION TECHNOLOGIES SESSION BY KEN JACKSON

- o Ken Jackson said that in his topical session, the group reviewed at length the capabilities and the limitations of today's decontamination technologies and the problems encountered in meeting current cleanup requirements.
- o He said that the group arrived at the following conclusions:
 - There is an urgent need for establishing more reasonable fixed criteria for the release of radioactively contaminated materials.
 - The release criteria for contaminated materials are much lower than are permitted in common use materials such as aluminum foil.
 - Current decontamination technologies can remove the major fraction of the radioactive contamination. However, some problems exist in removing the last traces of radioactivity.
 - There is a need for establishing well defined bulk release criteria.
 - It is very important that a thorough job be done in evaluating the decontamination problem and determining the best route for decontamination to avoid aggravating the original problem.
 - There is a need for worker safety and thorough training of the workers in operating the equipment properly and the potential hazards generated by the decontamination operations.
 - In situ decontamination is often the preferred approach for large equipment and structures.
 - The endpoint must be identified before undertaking decontamination operations; therefore, we realize the need for well-defined release criteria.

5.4 SUMMARY OF STRATEGIC OPTIONS SESSION BY BILL KENNEDY

- o Bill Kennedy prepared a few hand-drawn viewgraphs to summarize the proceedings of his topical session. A typed copy of these viewgraphs is given in Figs. 1 and 2.
- o A review of the above-mentioned viewgraphs provides a summary of Bill Kennedy's talk.

6. CONCLUDING REMARKS

- o After Bill Kennedy finished his summary presentation, Lance Mezga opened the floor for discussion on what was presented by the topical session chairs and on the workshop as a whole.
- o Bob Alexander asked Bill Kennedy about any experience he may have had in asking a consensus standard organization to approve a method or standard. Bill said that he did not have any direct experience. A brief discussion followed on this subject. The discussion concluded with Bill Kennedy indicating that the suggestion to ask a consensus standard organization to approve a method was made based on comments made by Ed Walker during the strategic options topical session.
- o J. C. Bailey (from the audience) made a motion to recommend to DOE that it undertake to complete five tasks, which are listed in Table 4.

Table 4. Proposed Recommendations to DOE by J. C. Bailey

-
1. Institute a formal review of models for deriving limits.
 2. Choose a model for application (with appropriate peer review).
 3. Choose an applicable dose limit.
 4. Derive suggested limit.
 5. Petition NRC on fast-track basis to adopt the limits.
-

VIEWGRAPH 1 - STRATEGIC OPTIONS GROUP

OBJECTIVE: To identify and discuss alternative strategies for developing surface/bulk unrestricted release limits.

CURRENT STATUS: Regulatory Guide 1.86 provides surface (not bulk) limits - DOE sites have different methods/procedures.

VIEWGRAPH 2 - STRATEGIC OPTIONS GROUP

FACTORS/VALUES

- o Technical Credibility
- o Practicality/Cost/Detectability
- o Regulatory Compliance (Ease)
- o Public Opinion
 - The need to find an optimum approach that maximizes each!

VIEWGRAPH 3 - STRATEGIC OPTIONS GROUP

ISSUE

ROLE OF BRC: BRC and associated limits (currently under review) are a subset of unrestricted use; concentrate on the development of unrestricted use criteria.

Fig. 1. Viewgraphs Used by Bill Kennedy in Summarizing the Proceedings of the Strategic Options Topical Session.

VIEWGRAPH 4 - STRATEGIC OPTIONS GROUP

1. Continued use of Regulatory Guide 1.86 for Surfaces - Develop consistent bulk limits; and
2. Establish a risk (dose) standard, identify modeling methods, and derive secondary standards for surface and bulk activity (screening or site-specific).

VIEWGRAPH 5 - THE RECOMMENDATIONS OF THIS WORKSHOP

1. DOE approach NRC to set guidance for unrestricted release,
2. DOE develop a review of model methods for deriving limits (surface/bulk),
3. DOE approach ANSI or ASTM to approve modeling methods, and
4. DOE apply models/methods and submit results for ANSI/ASTM review/approval.

Fig. 2. Additional Viewgraphs Used by Bill Kennedy in Summarizing the Proceedings of the Strategic Options Topical Session.

- o Lance then outlined a plan of follow-up action after the workshop. The plan called for preparing a summary of the workshop proceedings, taking the summary to John Tseng at DOE/HQ, discussing with him the magnitude of the problem and the needs that had to be met both in the near future and the longer term, and then outlining a plan of action similar to the five steps proposed by J. C. Bailey. Assuming the plan is acceptable to John Tseng, then an action plan of program implementation would be developed.
- o Lance believed that the issue of reasonable release criteria is important to John Tseng and that the timing for contacting John is excellent now.
- o Bob Alexander indicated that an unusual window of opportunity is available now at NRC because the NRC Commissioners want to do something reasonable in this area. It was felt that we need to take advantage of this opportunity.
- o A brief discussion among Bill Kennedy, a member of the audience, and Lance Mezga followed on the modeling methodology proposed by Bill, the release criteria, and the need to develop an inventory of the release criteria models used by the various DOE sites.
- o Bob Alexander then responded to a question/comment from the audience on EPA's interagency committee for developing guidance to federal agencies on the criteria for residual radioactivity. He believed that it would be several years before this guidance would become available.
- o Lance said that he agrees with a comment from the audience that we need to get moving on this, and that is his plan when he goes to Washington to talk with DOE/HQ.
- o Lance then thanked the audience and speakers for participating in the workshop, and the workshop was adjourned.

APPENDIX A. LIST OF ATTENDEES AT THE OFF-SITE RELEASE CRITERIA FOR
CONTAMINATED MATERIALS WORKSHOP

ATTENDEES

OFF-SITE RELEASE CRITERIA WORKSHOP
May 2-3, 1989

Richard B. Alderfer Martin Marietta Energy Systems, Inc. P. O. Box 2003, Bldg. K-1401 Oak Ridge, TN 37831-7387	615-576-0225 FTS 626-0225
R. E. Alexander 13131 Maltese Lane Fairfax, VA 22033	703-378-6720
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J. C. Bailey Consultant, ORGDP 102 Norway Lane Oak Ridge, TN 37830	615-482-2125
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Jim Berger ORAU Scarborough Facility Oak Ridge, TN 37830	615-576-3305

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W. E. Kennedy, Jr. Battelle Pacific Northwest Laboratories P. O. Box 999 Richland, WA 99352	509-375-2019
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D. A. Kucsmas Martin Marietta Energy Systems, Inc. P. O. Box 2008 Oak Ridge, TN 37831-6342	615-574-5474 FTS 624-5474

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Wm. R. McDonnell Savannah River Laboratory E. I. DuPont deNemours & Co. Aiken, SC 29808	803-715-5338
Elizabeth S. McDougald Martin Marietta Energy Systems, Inc. P. O. Box 2003 Oak Ridge, TN 37831-7155	615-576-4489 FTS 626-4489
L. J. Mezga Martin Marietta Energy Systems, Inc. P. O. Box 2003 Oak Ridge, TN 37831-7155	615-574-7259 FTS 624-7259

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APPENDIX B. VIEWGRAPHS USED BY W. R. HANSEN

*WORKSHOP ON OFFSITE RELEASE CRITERIA
FOR CONTAMINATED MATERIALS*

NATURE AND MAGNITUDE OF THE PROBLEM

WAYNE R. HANSEN

LOS ALAMOS NATIONAL LABORATORY

RELEASE CRITERIA FOR

- RADIOACTIVE CONTAMINANTS
- METALS
- ORGANICS

LOS ALAMOS

RADIOACTIVE CONTAMINANTS

- NATURAL RADIONUCLIDES

 - MILL TAILINGS

 - RADIUM FACILITIES

 - THORIUM FACILITIES

- AEA ACTIVITIES

 - DOE FACILITIES

 - REACTORS

 - LICENSED FUEL CYCLE FACILITIES

 - UNIVERSITIES & HOSPITALS

- ACCELERATORS

LOS ALAMOS

METALS

- HIGH POTENTIAL FOR RECYCLE METALS
CONTAMINATED WITH

- ✓ U
- ✓ Pb
- ✓ Hg
- ✓ ETC.

- METAL IONS IN SOLUTION

CRITERIA FOR RECYCLE

CRITERIA FOR BRC

LOS ALAMOS

ORGANICS

- ORGANICS CONTAMINATED WITH
 - ✓ TRACE METALS
 - ✓ OTHER "HAZARDOUS" ORGANICS

- WOOD FROM BUILDINGS
 - ✓ ASBESTOS

DOE PROGRAMS

- UMTRA
- ENVIRONMENTAL RESTORATION
- D & D
- FUSRAP

LOS ALAMOS

UMTRA

- EPA STANDARDS FOR MILL TAILINGS
- NON-RADIOACTIVE-NEGOTIATE
PER CERCLA/SARA

STATES

EPA REGIONS

LOCAL INTERESTS

NATIVE AMERICANS

LOS ALAMOS

DOE ENVIRONMENTAL RESTORATION

- RADIOACTIVE MATERIALS
- METALS
- ORGANICS
- MIXED

USES ARAR'S

"APPLICABLE REQUIREMENTS AND REGULATIONS"

- EXISTING EPA STANDARDS, e.g. DRINKING WATER
- STATE CAN BE MORE RESTRICTIVE
- NEGOTIATE!

LOS ALAMOS

D & D

- METALS
- ORGANICS
- RADIOACTIVITY
- MIXED

ON OR IN

- BUILDINGS
- BURIED PIPES, SEPTIC FIELDS, TANKS

WITH OWNERSHIP BY

- PRIVATE INDIVIDUALS
- INDUSTRIAL
- LOCAL OR STATE
- OTHER FEDERAL AGENCY
- DOE

LOS ALAMOS

FUSRAP

- INDUSTRIAL FACILITIES
- CHEMICAL PLANTS
- LARGE AREAS FROM AEC OUTFALLS
- NUCLEAR WEAPONS TEST SITE – TRINITY
- ANYTHING ELSE DECIDED

LOS ALAMOS

EXPERIENCE WITH RELEASE CRITERIA

- UMTRA – EPA STANDARDS & DRINKING WATER STANDARDS
- FUSRAP
 - IG BASED CRITERIA DEMANDED "HEALTH EFFECTS" RESULTED IN ORO-831 & ORO-832
 - SINCE THEN
 - ✓ ANL MODELS
 - ✓ EPA REUSIT
 - ✓ PNL MODELS
 - ✓ ASTM GUIDANCE
 - ✓ BELOW REGULATORY CONCERN (BRC)
- STILL NEED GUIDANCE FROM EPA OR NRC

CONCLUSIONS

NEED CRITERIA FOR RELEASE OF MATERIALS

- FOR FUTURE USE
- FOR RECYCLE OF MATERIALS
- FOR DISPOSAL IN LANDFILLS

INVOLVES

- LAND AREAS
- BUILDINGS – LARGE AND SMALL
- VARIETY OF OWNERSHIP
- VARIETY OF CONTAMINANTS

RADIOACTIVE LIMITS MOST AVAILABLE

LOS ALAMOS

APPENDIX C. VIEWGRAPHS USED BY P. K. JACKSON

CURRENT INDUSTRY PRACTICES

DECONTAMINATION FOR RELEASE OF CONTAMINATED MATERIALS

**P. K. JACKSON
BECHTEL NATIONAL, INC.**

DECONTAMINATION TECHNIQUES

- HIGH PRESSURE WATER
- ULTRA-HIGH PRESSURE WATER
- ABRASIVE BLAST
- LIQUID ABRASIVE BLAST
- FREON CLEANING
- CHEMICAL
- MELT TECHNOLOGY

HIGH PRESSURE WATER

- 250 TO 10,000 PSI
- AMBIENT TO 300 DEGREES
- SURFACE CONTAMINANTS
- ABRASIVES INCREASE EFFECTIVENESS
- LOW SOLID WASTE VOLUMES
- LOW TO MODERATE LIQUID WASTE
- 20 TO 50 SQ FT PER HOUR

ULTRA-HIGH PRESSURE WATER

- 12,000 TO 55,000 PSI
- AMBIENT TEMPERATURE
- SURFACE AND NEAR-SURFACE
- ABRASIVES INCREASE EFFECTIVENESS
- CUTTING CAPABILITY
- LOW SOLID AND LIQUID WASTE
- 20 TO 40 SQ FT PER HOUR

ABRASIVE BLAST

- LOW PRESSURE AIR (100-150 PSI)
- SILICA OR METAL GRIT
- SURFACE AND NEAR-SURFACE
- MODERATE TO HIGH SOLID WASTE
- NO LIQUID WASTE
- 20 TO 50 SQ FT PER HOUR

LIQUID ABRASIVE BLAST

- 80 TO 100 PSI
- AMBIENT TEMPERATURE
- SILICA OR METAL GRIT
- LOW SOLID AND LIQUID WASTE
- 10 TO 20 SQ FT PER HOUR

FREON CLEANING

- 100 TO 200 PSI SPRAY
- SURFACE AND NEAR SURFACE
- LOW SOLID WASTE
- NO LIQUID WASTE
- 20 TO 30 SQ FT PER HOUR
- FLUOROCARBON

CHEMICAL

- VARIOUS SOLUTIONS (SOFT, HARD)
- AMBIENT TO 200 DEGREES
- SURFACE AND NEAR SURFACE
- LOW TO MODERATE SOLID WASTE
- MODERATE TO HIGH LIQUID WASTE
- MIXED WASTE POTENTIAL
- VARIABLE RATE

MELT TECHNOLOGY

- CAN SEPARATE CONTAMINANTS AND BASE METALS
- SLAG USUALLY CONTAINS CONTAMINANTS
- NEW TECHNOLOGY
- ACHIEVES VERY GOOD RESULTS
- PROCESS RATES DEPEND ON EQUIPMENT
- SURFACE AND ENTRAPPED CONTAMINANTS

APPENDIX D. HANDOUT GIVEN BY J. B. BUCKLEY

The EPA Hazardous Waste Code List & Restrictions
40 CFR Part 261, Subparts C & D
Update: November 28, 1988, J. Stiemmer

The attached list is a summary of all currently valid EPA hazardous waste codes, sorted by waste code number.

For each waste code, the columns tell:

- whether the waste is banned from storage at CWM-Emelle by
 - a. the RCRA permit, noted by "NSP" in this column.
 - b. the Federal or state regulations, such as the land bans or 40 CFR 264-265; noted by "NSR" in this column.
 - c. the Corporate policy, noted by "NSC" in this column.
 - d. the site policy, noted by "NSS" in this column.
- whether the waste is banned from disposal (landfill) at CWM-Emelle by:
 - a. the RCRA permit, noted by "NLP" in this column.
 - b. the Federal or state regulations, such as the land bans or 40 CFR 264-265; noted by "NLR" in this column.
 - c. the Corporate policy, noted by "NLC" in this column.
 - d. the site policy, noted by "NLS" in this column.
- whether the waste is subject to the solvent ban,
Noted by "S" in this column, or "D" for dioxins.
- whether the waste is subject to the California List ban,
Noted by "CA" in this column.
- whether the waste is considered to be a potential HOC (Halogenated Organic Compound) waste, by the California List or First Third regulations.
Noted by "X" in this column.
- whether the waste is subject to the First Third ban,
Noted by "HH", for Hard Hammer;
"SH", for Soft Hammer, or
"HV", for Hard Hammer; subject to a variance.
- whether the waste is a wastewater for landban purposes,
Y = Yes, N = No,
If blank, then it may be either wastewater or nonwastewater
- the name or description of the waste. Please note that there may be multiple listings for the same waste, to cover the common synonyms. This is the same as the 40 CFR 261 listing. Wastes which are soft and hard hammer or have different properties; such as D002-acid and D002-base, will have separate listings, as well. This should be self-explanatory, when you look at the table.
- the treatment required if the waste is to be landfilled, (where treatments are specified). Supplemental variance and certification information appears to the right.

EPA Waste Code Restrictions at CWM-Emelle
Updated November 28, 1988, John Blamner
Call 205 - 652-9121 for details about the CWM-Emelle
requirements and procedures.

EPA Waste Code	Storage if Blank	Landfill if Blank	Calif Ban?	First List	is HOC	is Banned Waste?	is Water?	Name or Description	CWM - Emelle, Alabama Requirements General Comments regarding requirements that are in addition to, or summarizing the information in the columns at left.	Federal EPA Land ban and Regulatory treatment standards and variance information This is IN ADDITION to any prohibitions or restrictions in columns to the left.
D001								IGNITIBLE LIQUIDS WITH A FLASHPOINT < 140 DEGREES F	MUST PASS PAINT FILTER TEST FOR LANDFILL	MUST PASS PAINT FILTER TEST FOR LANDFILL
D001								IGNITIBLE SOLIDS: BURN EASILY, PERSISTANTLY & STRONGLY	TECH MANAGER MUST EVALUATE FOR SAFETY	
D001								OXIDIZERS, AS DEFINED BY DOT REGULATIONS (49 CFR)	TECH MANAGER MUST EVALUATE FOR SAFETY	
D002			CA					CORROSIVE ACIDS, PH < 2.0 AND IT MUST BE A LIQUID !	CALIFORNIA CERT NEEDED FOR EACH SHIPMENT	MUST PASS THE PAINT FILTER TEST
D002								CORROSIVE BASES, PH > 12.5 AND IT MUST BE A LIQUID !	MUST PASS PAINT FILTER TEST TO LANDFILL	MUST PASS PAINT FILTER TEST TO LANDFILL
D003	HLP							REACTIVE DUE TO WATER-REACTIVE ISOCYANATES, MDI / TDI	NO LANDFILL AT EMELLE. MAY BE STORED	MUST BE RENDERED NONREACTIVE TO LANDFILL
D003		HLP	CA					REACTIVE DUE TO CYANIDES OR BULFIDES	CA CERT IF > 1000 PPM CH - NO LANDFILL	MUST BE RENDERED NONREACTIVE TO LANDFILL
D003	HSC							REACTIVE DUE TO EXPLOSIVITY, OR CHANGES VIOLENTLY	EXPLOSIVES NOT ACCEPTED PER COMP POLICY	NO EXPLOSIVES MAY BE LANDFILLED
D003		HLP						REACTIVE DUE TO VIOLENT OR TOXIC REACTION WITH WATER	MAY BE STORED IN CONTAINERS, NO LANDFILL	NO WATER REACTIVES MAY BE LANDFILLED
D004								ARSENIC IN EP TOX 5 TO 499 PPM, & LIQUID WHEN GENERATED	MUST PASS PAINT FILTER TEST TO LANDFILL	MUST PASS PAINT FILTER TEST TO LANDFILL
D004			CA					ARSENIC IN EP TOX >= 500 PPM, & LIQUID WHEN GENERATED	CA CERT REQUIRED, & MUST PASS PAINT FILT	MUST PASS PAINT FILTER TEST FOR LANDFILL
D004								ARSENIC IN EP TOX >= 5 PPM & NOT LIQUID WHEN GENERATED		
D005								BARIUM IN EP TOX GREATER THAN OR EQUAL TO 100 PPM		
D006								CADMIUM IN EP TOX 1 TO 99 PPM, & LIQUID WHEN GENERATED	MUST PASS PAINT FILTER TEST TO LANDFILL	MUST PASS PAINT FILTER TEST TO LANDFILL
D006			CA					CADMIUM IN EP TOX >= 100 PPM, & LIQUID WHEN GENERATED	CA CERT REQUIRED & MUST PASS PAINT FILTR	MUST PASS PAINT FILTER TEST FOR LANDFILL
D006								CADMIUM IN EP TOX >= 5 PPM, & NOT LIQUID WHEN GENERATED		
D007								CHROMIUM IN EP TOX 5 TO 499 PPM & LIQUID WHEN GENERATED	MUST PASS PAINT FILTER TEST TO LANDFILL	MUST PASS PAINT FILTER TEST TO LANDFILL
D007			CA					CHROMIUM IN EP TOX >= 500 PPM & LIQUID WHEN GENERATED	CA CERT REQUIRED & MUST PASS PAINT FILTR	MUST PASS PAINT FILTER TEST FOR LANDFILL
D007								CHROMIUM IN EP TOX >= 5 PPM & NOT LIQUID WHEN GENERATED		
D008								LEAD IN EP TOX 5 TO 499 PPM, & LIQUID WHEN GENERATED	MUST PASS PAINT FILTER TEST TO LANDFILL	MUST PASS PAINT FILTER TEST TO LANDFILL
D008			CA					LEAD IN EP TOX >= 500 PPM, & LIQUID WHEN GENERATED	CA CERT REQUIRED & MUST PASS PAINT FILTR	MUST PASS PAINT FILTER TEST FOR LANDFILL
D008								LEAD IN EP TOX >= 5 PPM & NOT LIQUID WHEN GENERATED		
D009								MERCURY IN EP TOX .2 TO 19 PPM, & LIQUID WHEN GENERATED	MUST PASS PAINT FILTER TEST TO LANDFILL	MUST PASS PAINT FILTER TEST TO LANDFILL
D009			CA					MERCURY IN EP TOX >= 20 PPM, & LIQUID WHEN GENERATED	CA CERT REQUIRED & MUST PASS PAINT FILTR	MUST PASS PAINT FILTER TEST FOR LANDFILL
D009								MERCURY IN EP TOX >= .2 PPM & NOT LIQUID WHEN GENERATED		
D010								SELENIUM IN EP TOX 1 TO 99 PPM, & LIQUID WHEN GENERATED	MUST PASS PAINT FILTER TEST TO LANDFILL	MUST PASS PAINT FILTER TEST TO LANDFILL
D010			CA					SELENIUM IN EP TOX >= 100 PPM, & LIQUID WHEN GENERATED	CA CERT REQUIRED & MUST PASS PAINT FILTR	MUST PASS PAINT FILTER TEST FOR LANDFILL
D010								SELENIUM IN EP TOX >= 1 PPM & NOT LIQUID WHEN GENERATED		
D011								SILVER IN EP TOX CONCENTRATION >= 3.0 PPM		
D012			X					ENDRIN IN EP TOX CONCENTRATION >= 0.02 PPM		IF >1000 PPM, MUST BE INCINERATED (HOC)
D013								LINDANE IN EP TOX CONCENTRATION >= 0.02 PPM		
D014			X					METHOXYCHLOR IN EP TOX CONCENTRATION >= 10.0 PPM		IF >1000 PPM, MUST BE INCINERATED (HOC)
D015			X					TDAPHENE IN EP TOX CONCENTRATION >= 0.5 PPM		IF >1000 PPM, MUST BE INCINERATED (HOC)
D018	H53	HLS	X					2,4 - D IN EP TOX CONCENTRATION >= 10 PPM	MAY NOT BE RECEIVED AT CWM-EMELLE	IF >1000 PPM, MUST BE INCINERATED (HOC)
D017	H53	HLS	X					2,4,5 TP SILVER IN EP TOX CONCENTRATION >= 1.0 PPM	MAY NOT BE RECEIVED AT CWM-EMELLE	IF >1000 PPM, MUST BE INCINERATED (HOC)
F001			3					SOLVENTS-HALOGENATED, DEGRASING:METHYLENE CHLORIDE ETC	SOLVENT CERT REQUIRED WITH EACH SHIPMENT	INCIN, FUEL, OR PASS TCLP, OR BE CLEANUP SOIL
F002			5					SOLVENTS-HALOGENATED, METHYLENE CHLORIDE, TRICHLORO, ETC	SOLVENT CERT REQUIRED WITH EACH SHIPMENT	INCIN, FUEL, OR PASS TCLP, OR BE CLEANUP SOIL
F003			5					SOLVENTS-NON-HALO: XYLENE, ACETONE, METHANOL, MIB, ETC.	SOLVENT CERT REQUIRED WITH EACH SHIPMENT	INCIN, FUEL, OR PASS TCLP, OR BE CLEANUP SOIL
F004			5					SOLVENTS- CRESOLS, CRESYLIC ACID AND NITROBENZENE	SOLVENT CERT REQUIRED WITH EACH SHIPMENT	INCIN, FUEL, OR PASS TCLP, OR BE CLEANUP SOIL
F005			5					SOLVENTS-NONHALO: TOLUENE, MEK, ISOBUTANOL, PYRIDINE, CS2	SOLVENT CERT REQUIRED WITH EACH SHIPMENT	INCIN, FUEL, OR PASS TCLP, OR BE CLEANUP SOIL
F006			SH					ELECTROPLATING WASTEWATER TREATMENT SLUDGES- NOT WATERS	HARD CERT REQUIRED, TREATED OR UNTREATED	STABILIZATION AND MUST PASS TCLP
F006			SH					ELECTROPLATING WASTEWATERS (PROBABLY NOT AN FOOD WASTE)	SOFT HAMMER CERT & DEMO REQUIRED	CERT & DEMONSTR REQUIRED IF IT IS TRULY FOOD
F007			SH					ELECTROPLATING - CYANIDE BATH SOLUTIONS	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
F008			SH					ELECTROPLATING - CYANIDE BATH SOLUTIONS FROM BOTTOM	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
F008			SH					ELECTROPLATING - CYANIDE STRIPPING AND CLEANING BATHS	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
F009								METAL HEAT TREATING - CYANIDE QUENCHING FROM OIL BATHS		
F010								METAL HEAT TREATING - CYANIDE SALT BATH POT CLEANING		
F011								METAL HEAT TREATING - CYANIDE WASTEWATER QUENCHING BATH	MAY BE LANDFILLED, BUT NOT STORED	
F012	H5P							ALUMINUM CHEN, CONVERSION WASTEWATER TREATMENT SLUDGES	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
F013			SH							

EPA Waste Code Restrictions at CMW-Emelle
Updated November 28, 1988, John Stimmer
Call 205 - 837-9721 for details about the CMW-Emelle
requirements and procedures.

EPA Waste Code	Storage of blank	Landfill of blank	Landfill of blank	Calif. Sol-vents	First or Second	Is Third or Fourth	Is a Banned Waste?	Name or Description	CMW - Emelle, Alabama Requirements General comments regarding requirements that are in addition to, or summarizing the information in the columns at left.	Federal EPA Land ban and Regulatory Treatment standards and variance information. This is in addition to any prohibitions or restrictions in columns to the left.
F020	HSP	HLP	D					DIOXINS - TRI OR TETRACHLOROPHENOL FROM PRODUCTION	MAY NOT BE RECEIVED AT CMW-EMELLE	THERE IS NO PERMITTED TREATMENT
F021	HSP	HLP	D					DIOXINS - PENTACHLOROPHENOL PRODUCTION	MAY NOT BE RECEIVED AT CMW-EMELLE	THERE IS NO PERMITTED TREATMENT
F022	HSP	HLP	D					DIOXINS - TETRA, PENTA, OR HEXACHLOROBENZENE MFG USE	MAY NOT BE RECEIVED AT CMW-EMELLE	THERE IS NO PERMITTED TREATMENT
F023	HSP	HLP	D					DIOXINS - TRI OR TETRACHLOROPHENOL NONPESTICIDE USE	MAY NOT BE RECEIVED AT CMW-EMELLE	THERE IS NO PERMITTED TREATMENT
F024	HSP	HLP						DISTIL. RESIDUES FROM PROD. OF ALIPHATIC HYDROCARBONS	MAY NOT BE RECEIVED AT CMW-EMELLE	
F026	HSP	HLP	D					DIOXINS - TETRA, PENTA, OR HEXACHLOROBENZENE PRODUCTION	MAY NOT BE RECEIVED AT CMW-EMELLE	THERE IS NO PERMITTED TREATMENT
F027	HSP	HLP	D					DIOXINS - UNUSED TRI, TETRA, OR PENTACHLOROPHENOL SOLNS	MAY NOT BE RECEIVED AT CMW-EMELLE	THERE IS NO PERMITTED TREATMENT
F028								RESIDUES FROM INCINERATION OF F020 TO F023, 26, 27 SOILS		
K001					HM	H		CREOSOTE/PENTACHLOROPHENOL WOOD PRESERVING SLUDGE	HARD HAMMER CERTIFICATION REQUIRED	INCINERATE THEN STABILIZE THE ASH
K001					HV			WOOD PRESERVING SOIL & DEBRIS FROM CREOSOTE/PENTACHLOR.	HARD CERT WITH VARIANCE CHECKED REQUIRED	SOILS VARIANCE UNTIL 8/8/90
K001					HM	Y		WOOD PRESERVING WASTEWATER FROM CREOSOTE/PENTACHLOROPHE	TREATED TO STANDARD, HARD CERT REQUIRED	CHEMICAL PRECIPITATION
K002								CHROME YELLOW AND ORANGE PIGMENTS WASTEWATER TREATMENT		
K003								MOLYBDATE ORANGE PIGMENTS WASTEWATER TREATMENT SLUDGE		
K004		HLR			HM	H		ZINC YELLOW PIGMENTS WASTEWATER TREATMENT SLUDGE	MAY BE STORED IN CONTAINERS, NO LANDFILL	NO LAND DISPOSAL
K004					SH	Y		ZINC YELLOW PIGMENTS WASTEWATERS	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K005								CHROME GREEN PIGMENTS WASTEWATER TREATMENT SLUDGE		
K008								CHROME OXIDE GREEN PIGMENTS WASTEWATER TREATMENT SLUDGE		
K007								IRON BLUE PIGMENTS WASTEWATER TREATMENT SLUDGE		
F008		HLR			HM	H		CHROME OXIDE GREEN PIGMENTS OVEN RESIDUE	MAY BE STORED IN CONTAINERS, NO LANDFILL	NO LAND DISPOSAL
F008					SH	Y		CHROME OXIDE GREEN PIGMENTS OVEN RESIDUE WASTEWATERS	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
F009								ACETALDEHYDE DISTILLATION BOTTOMS FROM PRODUCTION		
K010								ACETALDEHYDE DISTILLATION SIDE CUTS FROM PRODUCTION		
K011	HSP	HLP			SH			ACRYLONITRILE BOTTOM STREAM WASTEWATER STRIPPER	MAY NOT BE RECEIVED AT CMW-EMELLE	CERT & DEMONSTRATION REQUIRED
K013	HSP	HLP			SH			ACETONITRILE COLUMN BOTTOM STREAM FROM PRODUCTION	MAY NOT BE RECEIVED AT CMW-EMELLE	CERT & DEMONSTRATION REQUIRED
K014					SH			ACETONITRILE PURIFICATION COLUMN BOTTOMS	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K015		HLR			HM			BENZYL CHLORIDE STILL BOTTOMS	MAY BE STORED IN CONTAINERS, NO LANDFILL	NO LAND DISPOSAL - BASED ON NO ASH
K015					HV			BENZYL CHLORIDE STILL BOTTOMS - SOIL & DEBRIS	HARD CERT WITH VARIANCE CHECKED REQUIRED	SOILS VARIANCE UNTIL 8/8/90
K016					HM			CARBON TETRACHLORIDE HEAVY ENDS OR DISTILLATION RESIDUE	ASH MAY BE LANDFILLED WITH HARD CERT	INCINERATION, THEN THE ASH MAY BE LANDFILLED
K016					HV			CARBON TET. HEAVY ENDS OR STILL RES. - SOIL & DEBRIS	HARD CERT WITH VARIANCE CHECKED REQUIRED	SOILS VARIANCE UNTIL 8/8/90
K017					X SH			EPICHLOROHYDRIN STILL BOTTOMS FROM THE PURIFICATION COL	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K018					HM			ETHYL CHLORIDE HEAVY ENDS FROM FRACTIONATION COLUMN	INCINERATED ASH ONLY, HARD CERT REQUIRED	INCINERATION
K018					HV			ETHYL CHLORIDE HEAVY ENDS FRACT. COLUMN - SOIL & DEBRIS	HARD CERT WITH VARIANCE CHECKED REQUIRED	SOILS VARIANCE UNTIL 8/8/90
K019					HM			ETHYLENE DICHLORIDE HEAVY ENDS FROM DISTILLATION	INCINERATED ASH ONLY, HARD CERT REQUIRED	INCINERATION
K019					HV			ETHYLENE DICHLORIDE STILL HEAVY END - SOIL & DEBRIS	HARD CERT WITH VARIANCE CHECKED REQUIRED	SOILS VARIANCE UNTIL 8/8/90
K020					HM			VINYL CHLORIDE HEAVY ENDS FROM DISTILLATION	INCINERATED ASH ONLY, HARD CERT REQUIRED	INCINERATION
K020					HV			VINYL CHLORIDE STILL HEAVY END - SOIL & DEBRIS	HARD CERT WITH VARIANCE CHECKED REQUIRED	SOILS VARIANCE UNTIL 8/8/90
K021		HLR			HM	H		ANTIMONY CATALYST WASTE FROM FLUOROMETHANES PRODUCTION	MAY BE STORED IN CONTAINERS, NO LANDFILL	NO LAND DISPOSAL
K021					X SH	Y		ANTIMONY CATALYST WASTEWATERS FROM FLUOROMETHANES PROD.	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K022					HM	H		PHENOL/ACETONE FROM CUMENE DISTILLATION BOTTOM TARS	TREATED TO STANDARD, HARD CERT REQUIRED	FUELS THEN STABILIZE ASH, PRECIP SCRUBBER H2O
K022					SH	Y		PHENOL/ACETONE WASTEWATER FROM CUMENE DISTL. BOTTOM TAR	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K023								PHTHALIC ANHYDRIDE FROM NAPHTHALENE DISTILLATION LIGHT		
K024					HM			PHTHALIC ANHYDRIDE FROM NAPHTHALENE DISTILLATION BOTTOM	INCINERATED ASH ONLY, HARD CERT REQUIRED	INCINERATION
K024					HV			PHTHALIC ANHYDRIDE FROM NAPHTH. STILL - SOIL & DEBRIS	HARD CERT WITH VARIANCE CHECKED REQUIRED	SOILS VARIANCE UNTIL 8/8/90
K025		HLR			HM	H		NITROBENZENE DISTILLATION BOTTOMS - NONWASTEWATERS	MAY BE STORED IN CONTAINERS, NO LANDFILL	NO LAND DISPOSAL
K025						Y		NITROBENZENE DISTILLATION BOTTOMS - WASTEWATERS		
K026								METHYL ETHYL PYRIDINES STRIPPING STILL TAILS FROM PROD		
K027	HSP	HLP						IONENE DIISOCYANATE CENTRIFUGE AND DISTILLATION RESIDU	MAY NOT BE RECEIVED AT CMW-EMELLE	
K028					X			1,1,1-TRICHLOROETHANE SPENT CATALYST FROM HYDROCHLORINA		IF >1000 PPM, MUST BE INCINERATED (HCL)
K028					X			1,1,1-TRICHLOROETHANE WASTE FROM THE PRODUCT STREAM STR		IF >1000 PPM, MUST BE INCINERATED (HCL)

EPA Waste Code Restrictions at CMW-Emelle
Updated November 28, 1988, John Slawter
Call 205 - 632-8721 for details about the CMW-Emelle
requirements and procedures.

EPA No.	Storage Code	Landfill Code	Calif. Code	First List	Is Banned?	Is a Waste?	Name or Description	CMW - Emelle, Alabama Requirements General comments regarding requirements that are in addition to, or summarizing the information in the columns at left.	Federal EPA Land ban and Regulatory treatment standards and variance information. This is IN ADDITION to any prohibitions or restrictions in columns to the left.
K030							TRICHLOROETHYLENE AND PERC BOTTOMS FROM COMBINED PRODU	INCINERATED ASH ONLY, HARD CERT REQUIRED	INCINERATION
K030							TRICHLOROETHYLENE & PERCHLOR PRODUCTION - SOIL & DEBRIS	HARD CERT WITH VARIANCE CHECKED REQUIRED	SOILS VARIANCE UNTIL 8/8/90
K031							MSMA AND CACODYLIC ACID BY-PRODUCT SALTS	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K032							CHLORDANE WASTEWATER TREATMENT SLUDGE		IF >1000 PPM, MUST BE INCINERATED (HOC)
K033							CHLORDANE WASTEWATER AND SCRUB WATER FROM CHLORINATION		IF >1000 PPM, MUST BE INCINERATED (HOC)
K034							CHLORDANE FILTER SOLIDS FROM HEXACHLOROCYCLOPENTADIENE		IF >1000 PPM, MUST BE INCINERATED (HOC)
K035							CREOSOTE WASTEWATER TREATMENT SLUDGES	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K038		HLR					DISULFOTON STILL BOTTOMS FROM TOLUENE RECLAMATION	MAY BE STORED IN CONTAINERS, NO LANDFILL	NO LAND DISPOSAL
K038							DISULFOTON STILL BOTTOMS WASTEWATER FROM TOLUENE RECLAM	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K037							DISULFOTON WASTEWATER TREATMENT SLUDGES	INCINERATED ASH ONLY, HARD CERT REQUIRED	INCINERATION
K037							DISULFOTON WASTEWATER TREATMENT SLUDGE - SOIL & DEBRIS	HARD CERT WITH VARIANCE CHECKED REQUIRED	SOILS VARIANCE UNTIL 8/8/90
K039							PHOSPHATE WASTEWATER FROM THE WASHING AND STRIPPING		
Y039							DIETHYLPHOSPHORODITHIOIC ACID FILTER CAKE FROM FILTRATI		
D500							PHOSPHATE WASTEWATER TREATMENT SLUDGE		
K041							TOXAPHENE WASTEWATER TREATMENT SLUDGE		
K042	H55	HL5					2,4,5-T DISTILLATION RESIDUES FROM TETRACHLOROBENZENE	MUST BE INCINERATED TO BE LANDFILLED	IF >1000 PPM, MUST BE INCINERATED (HOC) INCINERATION PREFERRED
K043							2,8-DICHLOROPHENOL WASTE FROM THE PRODUCTION OF 2,4-D		IF >1000 PPM, MUST BE INCINERATED (HOC)
K044	H5P	HLP					EXPLOSIVES WASTEWATER TREATMENT SLUDGES FROM MFG.	MAY NOT BE RECEIVED AT CMW-EMELLE	NO LAND DISPOSAL
K045	H5P	HLP					EXPLOSIVES SPENT CARBON FROM TREATMENT OF WASTEWATER	MAY NOT BE RECEIVED AT CMW-EMELLE	NO LAND DISPOSAL
K046							LEAD-BASED INITIATING WASTEWATER TREATMENT SLUDGES	TREATED TO STANDARD, HARD CERT REQUIRED	STABILIZ FOR NONEXPLOSIVE NONWATERS
K048							EXPLOSIVE LEAD-BASED INITIATING TAT, NON-WASTEWATERS	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K047	H5P	HLP					TNT PINK/RED WATER	MAY NOT BE RECEIVED AT CMW-EMELLE	NO LAND DISPOSAL
K048							DAF FLOAT FROM THE PETROLEUM REFINING INDUSTRY	HARD CERT WITH VARIANCE CHECKED REQUIRED	VARIANCE TO 8/8/90 THEN INCH & STABILIZE
K049							SLOP OIL EMULSION SOLIDS FROM PETROLEUM REFINING INDUSTRY	HARD CERT WITH VARIANCE CHECKED REQUIRED	VARIANCE TO 8/8/90 THEN INCH & STABILIZE
P050							HEAT EXCHANGER BUNDLE CLEANING SLUDGE FROM PETROLEUM RE	HARD CERT WITH VARIANCE CHECKED REQUIRED	VARIANCE TO 8/8/90 THEN INCH & STABILIZE
K051							API SEPARATOR SLUDGE FROM PETROLEUM REFINING	HARD CERT WITH VARIANCE CHECKED REQUIRED	VARIANCE TO 8/8/90 THEN INCH & STABILIZE
K052							TANK BOTTOMS (LEADED) FROM PETROLEUM REFINING	HARD CERT WITH VARIANCE CHECKED REQUIRED	VARIANCE TO 8/8/90 THEN INCH & STABILIZE
K060		HLR					AMMONIA STILL LINE SLUDGE FROM COKING OPERATIONS	MAY BE STORED IN CONTAINERS, NO LANDFILL	NO LAND DISPOSAL
K060							AMMONIA STILL LINE WASTEWATER FROM COKING OPERATIONS	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P061							EMISSION CONTROL DUST/SLUDGE FROM PROD OF STEEL IN ELEC	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	LAWUIT PENDING - CERT & DEMO UNTIL THEN
K061							EMISSION CONTROL DUST/SLUDGE WASTEWATER FROM STEEL PROD	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K062							SPENT PICKLE LIQUOR FROM STEEL FINISHING OPERATIONS OF	TREATED TO STANDARD, HARD CERT REQUIRED	CR REDUCTION, PRECIP, VACUUM FILTER
K063		HLR					ZNO LEAD SMELTING EMISSION CTRL DUST/SLUDGE - NON-CAS04	MAY BE STORED IN CONTAINERS, NO LANDFILL	TOTAL RECYCLE FOR NON CA SULFATE
K065							ZNO LEAD SMELTING EMISSION CTRL WASTEWATER, NON-CAS04	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K065							ZNO LEAD SMELTING EMISSION CONTROL DUST, WITH CAS04	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K071							BRINE PURIFICATION MUDS FROM MERCURY CELL PROCESS IN CH	HARD CERT WITH VARIANCE CHECKED REQUIRED	VARIANCE TO 8/8/90 THEN ACID/CHEM OXIDAT
K071							BRINE PURIFICATION MUDS FROM Hg CELL PROCESS-WASTEWATER	HARD CERT WITH VARIANCE CHECKED REQUIRED	VARIANCE TO 8/8/90 THEN SULFD/FILTRATION
A073							CHLORINATED HYDROCARBON WASTE PURIFICATION OF DIAPHRAGM	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K083		HLR					ANILINE DISTILLATION BOTTOMS FROM PRODUCTION, <0.01% ASM	MAY BE STORED IN CONTAINERS, NO LANDFILL	NO LAND DISPOSAL - BASED ON <0.01% ASM
K083							ANILINE DISTILLATION BOTTOMS WASTEWATER	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K083							ANILINE DISTILLATION BOTTOMS FROM MFG - SOIL & DEBRIS	HARD CERT WITH VARIANCE CHECKED REQUIRED	SOILS VARIANCE UNTIL 8/8/90
K081							ANILINE DISTILLATION BOTTOMS FROM PRODUCTION, >>.01% ASM	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K084							VETERINARY PHARMACEUTICALS WASTEWATER SLUDGES FROM ABSZ	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K085							CHLOROBENZENES DISTILLATION OF FRACTIONATION COLUMN MUD	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K086	H5P	HLP					1HR SOLVENT WASHES WITH LEAD & CR FROM CLEANING - NON-MM	MAY NOT BE RECEIVED AT CMW-EMELLE	INCINERATE THEN STABILIZE THE ASH
K088	H5P	HLP					1HR SOLVENT WASHES WITH LEAD & CHROME - WASTEWATERS	MAY NOT BE RECEIVED AT CMW-EMELLE	CR REDUCTION, CHEM PRECIPITAT, FILTRATION
K088	H5P	HLP					1HR CAUSTIC WATER WASHES & SLUDGES WITH LEAD & CHROME	MAY NOT BE RECEIVED AT CMW-EMELLE	CERT & DEMONSTRATION REQUIRED
K087							COKING DECAIKER TANK TAR SLUDGE - NONWASTEWATERS	TREATED TO STANDARD, HARD CERT REQUIRED	INCINERATE, THEN STABILIZE THE ASH
P087							COKING DECAIKER TANK TAR SLUDGE - WASTEWATERS		

EPA Waste Code Restrictions at CMH-Emelle
Updated November 28, 1988, John Slammer
Call 205 - 652-9721 for details about the CMH-Emelle
requirements and procedures.

EPA Waste Code	Storage if blank	Landfill if blank	Calif San?	First Third	Is it a Banned Waste?	Name or Description	CMH - Emelle, Alabama Requirements General comments regarding requirements that are in addition to, or summarizing the information in the columns at left.	Federal EPA land ban and Regulatory Treatment standards and variance information This is IN ADDITION to any prohibitions or restrictions in column to the left
K087						COKING DECAHTER TANK TAR SLUDGE - SOIL & DEBRIS	HARD CERT WITH VARIANCE CHECKED REQUIRED	SOILS VARIANCE UNTIL 8/8/90
K093						PHTHALIC ANHYDRIDE FROM ORTHO-XYLENE DISTILLATION LIGHT		
K094						PHTHALIC ANHYDRIDE FROM ORTHO-XYLENE DISTILLATION BOTTOM		
P035				X		1,1,1-TRICHLOROETHANE DISTILLATION BOTTOMS		IF >1000 PPM, MUST BE INCINERATED (HCL)
K088				X		1,1,1-TRICHLOROETHANE HEAVY ENDS FROM COLUMN		IF >1000 PPM, MUST BE INCINERATED (HCL)
P037				X		CHLORDANE CHLORINATOR VACUUM STRIPPER DISCHARGE		IF >1000 PPM, MUST BE INCINERATED (HCL)
K098				X		TOXAPHENE UNTREATED PROCESS WASTEWATER FROM PRODUCTION		IF >1000 PPM, MUST BE INCINERATED (HCL)
K099	HSC	HLC				2,4-D UNTREATED WASTEWATER FROM PRODUCTION (DIOXINS)	MAY NOT BE RECEIVED AT CMH-EMELLE	DIOXINS NOT ACCEPTED PER CMH POLICY
K100		NLR			N	SECONDARY LEAD SMELTING WASTE LEACHING FROM ACID LEACH	MAY BE STORED IN CONTAINERS, NO LANDFILL	NO LAND DISPOSAL
K100					Y	SECONDARY LEAD SMELT WASTE FROM ACID LEACH- WASTEWATERS		NOT BANNED YET - SECOND THIRD
K101						VETERINARY PHARMACEUTICALS DISTIL.TAR RESIDUES, AR<18	TREATED TO STANDARD, HARD CERT REQUIRED	INCINERATE, THEN STABILIZE THE ASH
K101				SH		VETERINARY PHARMACEUTICALS TARS - HIGH, ARSENIC > 18	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K101						VETERINARY PHARMACEUTICALS STILL TAR RESID-SOIL & DEBRIS	HARD CERT WITH VARIANCE CHECKED REQUIRED	SOILS VARIANCE UNTIL 8/8/90
K102						VETERINARY PHARMACEUTICALS RESIDUE/ACTIV. CARBON,AR<18	TREATED TO STANDARD, HARD CERT REQUIRED	INCINERATE, THEN STABILIZE THE ASH
K102				SH		VETERINARY PHARMACEUTICALS CARBON,HIGH, ARSENIC > 18	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K102						VETERINARY PHARMACEUTICALS RES W/ACTCARBON-SOIL RESIDUES	HARD CERT WITH VARIANCE CHECKED REQUIRED	SOILS VARIANCE UNTIL 8/8/90
K103						ANILINE EXTRACTION PROCESS RESIDUES FROM PRODUCTION OF	TREATED TO STANDARD, HARD CERT REQUIRED	1.SOLV EXTR,2.STEAM STRP, 3.CARBON REGEN
K104						HITROBENZENE/ANILINE COMBINED WASTEWATER STREAMS	TREATED TO STANDARD, HARD CERT REQUIRED	SOLV EXTR,INCIN,STEAM,CARBON ADSORPT,REG
K105				X		CHLOROBENZENE SEPARATED AQUEOUS STREAM FROM REACTOR PR		IF >1000 PPM, MUST BE INCINERATED (HCL)
F106				SH		CHLORINE WASTEWATER TREATMENT SLUDGE FROM MERCURY CELL	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
K111	HSP	HLP				DINITROTOLUENE PRODUCT WASHWATERS	MAY NOT BE RECEIVED AT CMH-EMELLE	
K112	HSP	HLP				TOLUENEDIAMINE REACTION BYPRODUCT WATER FROM DRYING COL	MAY NOT BE RECEIVED AT CMH-EMELLE	
K113	HSP	HLP				TOLUENEDIAMINE CONDENSED LIQUID LIGHT ENDS FROM PURIFIC	MAY NOT BE RECEIVED AT CMH-EMELLE	
K114	HSP	HLP				TOLUENEDIAMINE VICINALS FROM PURIFICATION	MAY NOT BE RECEIVED AT CMH-EMELLE	
K115	HSP	HLP				TOLUENEDIAMINE HEAVY ENDS FROM PURIFICATION	MAY NOT BE RECEIVED AT CMH-EMELLE	
K116	HSP	HLP				TOLUENE DIISOCYANATE ORGANIC CONDENSATE FROM SOLVENT	MAY NOT BE RECEIVED AT CMH-EMELLE	
K117						ETHYLENE DIBROMIDE WASTEWATER FROM REACTOR VENT GAS SCR		
K118						ETHYLENE DIBROMIDE SPENT ADSORBEN SOLIDS FROM PURIFICAT		
P123	HSP	HLP				PROCESS WASTEWATER FROM PROD. ETHYLENEBISDITHIOCARBAMIC	MAY NOT BE RECEIVED AT CMH-EMELLE	
K124	HSP	HLP				REACTOR VENT SCRUBBER WATER ETHYLENEBISDITHIOCARBAMIC	MAY NOT BE RECEIVED AT CMH-EMELLE	
A125	HSP	HLP				FILTER, EVAP. & CENTRIF SOLID ETHYLENEBISDITHIOCARBAMIC	MAY NOT BE RECEIVED AT CMH-EMELLE	
K126	HSP	HLP				BAGHOUSE DUST & FLOOR SWEEPS ETHYLENEBISDITHIOCARBAMIC	MAY NOT BE RECEIVED AT CMH-EMELLE	
K134	HSP					ETHYLENE DIBROMIDE STILL BOTTOMS FROM THE PURIFICATION	MAY BE LANDFILLED, BUT NOT STORED	
P001					SH	WARFARIN WHEN CONCENTRATION IS >= 0.3 %	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P001					SH	3-(ALPHA-ACETONYL-BENZYL)-4-HYDROXYCOUMARIN & BALT	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P002						ACETAMIDE, N-(AMINOETHIOXIMETHYL)		
P002						1-ACETYL-2-THIOUREA		
P003						2-PROPEHAL		
P003						ACROLEIN		
P004				X	SH	1,2,3,4,10,10-HEXACHLORO-1,4,4A,5,8,8A-HEXAHYDRO-1,4:5,	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P004				X	SH	ALDRIN	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P005					SH	2-PROPEN-1-OL	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P005					SH	ALLYL ALCOHOL	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P006	HSP	HLP				ALUMINUM PHOSPHIDE (R.F)	MAY NOT BE RECEIVED AT CMH-EMELLE	
P007						3-(2H)-ISOXAZOLONE,3-(AMINOMETHYL)-		
P007						5-(AMINOMETHYL)-3-ISOXAZOLID		
P008						4-A-AMINOPYRIDINE		
P008						4 PYRIDINAMINE		

EPA Waste Code Restrictions at CWM-Emelle
Updated November 28, 1988, John Steamer
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requirements and procedures.

EPA Waste Code	Storage if blank	Landfill if blank	Sol-vent Ban?	Calif List Ban?	First Third Party Ban?	In Water?	Name or Description	CWM - Emelle, Alabama Requirements General comments regarding requirements that are in addition to, or summarizing the information in the columns to left.	Federal EPA Land ban and Regulatory treatment standards and variance information. This is IN ADDITION to any prohibitions or restrictions in columns to the left.
P005	HSP	HLP					PHENOL, 2,4,6-TRINITRO-, AMMONIUM SALT (R)	MAY NOT BE RECEIVED AT CWM-EMELLE	
P009	HSP	HLP					AMMONIUM PICRATE (R)	MAY NOT BE RECEIVED AT CWM-EMELLE	
P010					SH		ARSENIC ACID (T)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P011					SH		ARSENIC PENTOXIDE (T)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P011					SH		ARSENIC (V) OXIDE (T)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P012					SH		ARSENIC (III) OXIDE (T)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P013					SH		ARSENIC TRIOXIDE (T)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P013	HSP	HLP					POTASSIUM CYANIDE	MAY NOT BE RECEIVED AT CWM-EMELLE	
P014							THIOPHENOL		
P014							BENZENETHIOL		
P015					SH		BERYLLIUM DUST (T)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P018			X		SH		METHANE, DIBIS(1-CHLORO-2-(2-CHLOROMETHYL) ETHYL	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P016			X		SH		2-PROPANONE, 3-BROMO- (T)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P017							BROMOACETONE (T)		
P018					SH		STYCHNIDIIONE, 2,3-DIMETHOXY-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P018					SH		BRUCINE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P020					SH		DIBOSES	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P020					SH		PHENOL, 2,4-DINITRO-2-(1-METHYLPROPYL)-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P021		HLP					CALCIUM CYANIDE	MAY BE STORED IN CONTAINERS, NO LANDFILL	
P022		HLP					CARBON BISULFIDE (T)	MAY BE STORED IN CONTAINERS, NO LANDFILL	
P022		HLP					CARBON BISULFIDE (T)	MAY BE STORED IN CONTAINERS, NO LANDFILL	
P023							ACETALDEHYDE, CHLORO-		
P023							CHLOROACETALDEHYDE		
P024				X			BENZENAMINE, 4-CHLORO-		IF >1000 PPM, MUST BE INCINERATED (HOC)
P024				X			P-CHLORANILINE		IF >1000 PPM, MUST BE INCINERATED (HOC)
P028							THIOUREA, (2-CHLOROPHENYL)-		
P028							1-(10-CHLOROPHENYL)THIOUREA		
P027				X			PROPANENITRILE, 3-CHLORO-		IF >1000 PPM, MUST BE INCINERATED (HOC)
P027				X			3-CHLOROPROPIONITRILE		IF >1000 PPM, MUST BE INCINERATED (HOC)
P028							BENZENE, (CHLOROMETHYL)-		
P028							BENZYL CHLORIDE		
P029		HLP					COPPER CYANIDES	MAY BE STORED IN CONTAINERS, NO LANDFILL	
P030		HLP			SH		CYANIDES - SOLUBLE SALTS NOT SPECIFIED ELSEWHERE (T)	MAY BE STORED IN CONTAINERS, NO LANDFILL	CERT & DEMONSTRATION REQUIRED
P031							CYANOGEN		
P033							CYANOGEN CHLORIDE		
P033							CHLORINE CYANIDE		
P034							4,8-DINITRO-D-CYCLOHEXYLPHENOL (T)		
P034							PHENOL, 2-CYCLOHEXYL-4,8-DINITRO- (T)		
P036		HLP		X	SH		DICHLOROPHENYLARSINE	MAY BE STORED IN CONTAINERS, NO LANDFILL	CERT & DEMONSTRATION REQUIRED
P036		HLP		X	SH		PHENYL DICHLORARSINE	MAY BE STORED IN CONTAINERS, NO LANDFILL	CERT & DEMONSTRATION REQUIRED
P037				X	SH		DIELDRIH	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P037				X	SH		1,2,3,4,10,10-HEXACHLORO-8,7-EPOXY-1,4,4A,5,8,7,8,8A-DIEHTYLARSINE (T)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P038							ARSENIC, DIETHYL- (T)		
P039					SH		O,O-DIETHYL S-(2-{[ETHYLTHIO]ETHYL} PHOSPHORODITHIOATE (T)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P039					SH		DIETHYLPHOSPHONIC (T)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	

EPA Waste Code Restrictions at CMW-Emelle
Updated November 28, 1988, John Slesmer
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requirements and procedures.

EPA Waste Code	Storage OK at Emelle if blank	Landfill OK at Emelle if blank	Calif Sol- vent Ban?	or nia List Ban?	First Third Maste?	Is It a Banned Waste water?	Name or Description	CMW - Emelle, Alabama Requirements General comments regarding requirements that are in addition to, or summarizing the information in the columns at left.	Federal EPA Land Ban and Regulatory Treatment standards and variance information. This is IN ADDITION to any prohibitions or restrictions in columns to the left.
P102					SH		PROPARGYL ALCOHOL	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P102					SH		2-PROPYN-1-OL	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P103							SELENOUREA		
P103							CARBAMIMIDOSELENOIC ACID		
P104	HSP	HLP					SILVER CYANIDE	MAY NOT BE RECEIVED AT CMW-EMELLE	
P105					SH		SODIUM AZIDE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P106	HSP	HLP					SODIUM CYANIDE	MAY NOT BE RECEIVED AT CMW-EMELLE	
P107	HSP	HLP					STRONTIUM SULFIDE (T)	MAY NOT BE RECEIVED AT CMW-EMELLE	
P108					SH		STRYCHNIDIN-10-ONE, AND SALTS (T)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P108					SH		STRYCHNINE AND SALTS (T)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P109							DITHIOPYROPHOSPHORIC ACID, TETRAETHYL ESTER		
P109							TETRAETHYLDITHIOPYROPHOSPHATE		
P110					SH		PLUMBAHE, TETRAETHYL-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P110					SH		TETRAETHYL LEAD	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P111							TETRAETHYLPYROPHOSPHATE		
P111							PYROPHOSPHORIC ACID, TETRAETHYL ESTER		
P112	HSP	HLP					METHANE, TETRANITRO- (R)	MAY NOT BE RECEIVED AT CMW-EMELLE	
P112	HSP	HLP					TETRAINITROMETHANE (R)	MAY NOT BE RECEIVED AT CMW-EMELLE	
P113							THALLIUM (III) OXIDE		
P113							THALLIC OXIDE		
P114							THALLIUM(I) SELENIDE		
P115					SH		SULFURIC ACID, THALLIUM(I) SALT	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P115					SH		THALLIUM(I)SULFATE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P116							HYDRAZINECARBOTHIOAMIDE		
P116							THIOSEMICARBAZIDE		
P118							METHANETHIOL, TRICHLORO-		
P118							TRICHLOROMETHANETHIOL		
P119							VANADIC ACID, AMMONIUM SALT		
P119							AMMONIUM VANADATE		
P120					SH		VANADIUM PENTOXIDE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P120					SH		VANADIUM(V) OXIDE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P121	HSP	HLP					ZINC CYANIDE	MAY NOT BE RECEIVED AT CMW-EMELLE	
P122	HSP	HLP			SH		ZINC PHOSPHIDE (R,T)	MAY NOT BE RECEIVED AT CMW-EMELLE	CERT & DEMONSTRATION REQUIRED
P122	HSP	HLP			SH		ZINC PHOSPHIDE, WHEN PRESENT AT CONCENTRATIONS > 10%	MAY NOT BE RECEIVED AT CMW-EMELLE	CERT & DEMONSTRATION REQUIRED
P123					X SH		TOXAPHENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P123					X SH		CAMPHENE, OCTACHLORO-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U001							ETHANAL (I)		
U001							ACETALDEHYDE (I)		
U002							2-PROPANONE (I)		
U002							ACETONE (I)		
U003							ETHANENITRILE (I,T)		
U003							ACETONITRILE (I,T)		
U004							ETHANONE, 1-PHENYL-		
U004							ACETOPHENONE		
U005							2-ACETYLAMINOFLUORENE		
U005							ACETANIDE, N-SH-FLUOREN-2-YL-		
U008	HSP	HLP					ETHANOYL CHLORIDE (C.R.T)	MAY NOT BE RECEIVED AT CMW-EMELLE	
U008	HSP	HLP					ACETYL CHLORIDE (C.R.T)	MAY NOT BE RECEIVED AT CMW-EMELLE	

EPA Waste Code Restrictions at CMH-Emelle
Updated November 26, 1988. John Stiemer
Call 205 - 692-5721 for details about the CMH-Emelle
requirements and procedures.

EPA Waste Code	Storage Emelle if blank	Landfill Emelle if blank	Coli- vent Ban?	Calif- List Ban?	Frst- HOC ?	Is Third Banned Waste?	Name or Description	CMH - Emelle, Alabama Requirements General comments regarding requirements that are in addition to, or summarizing the information in the columns at left.	Federal EPA Land ban and Regulatory Treatment standards and variance information. This is IN ADDITION to any prohibitions or restrictions in columns to the left.
P041						SH	DIETHYL-P-NITROPHENYL PHOSPHATE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P041						SH	PHOSPHORIC ACID, DIETHYL P-NITROPHENYL ESTER	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P042							EPINEPHRINE		
P042							1,2-BENZENDIOL, 4-[[1-HYDROXY-2-(METHYLAMINO)ETHYL]-		
P043							DIISOPROPYL FLUOROPHOSPHATE		
P043							FLUORIDIC ACID, BIS(1-METHYLETHYL)ESTER		
P043							PHOSPHOROTRIIODIC ACID, BIS(1-METHYLETHYL) ESTER		
P044							DIMETHOATE (T)		
P044							PHOSPHORODITHIOLIC ACID, O,O-DIMETHYL S-(2-(METHYLAMINO)		
P045							3,3-DIMETHYL-1-(METHYLTHIO)-2-BUTANONE,O-[(METHYLAMINO)		
P045							TRIOFANOL		
P046							ALPHA,ALPHA-DIMETHYLPHENETHYLAMINE (T)		
P046							ETHANAMINE,1,1-DIMETHYL-2-PHENYL- (T)		
P047							4,6-DINITRO-O-CRESOL AND SALTS		
P047							PHENOL,2,4-DINITRO-6-METHYL-, AND SALTS		
P048						SH	2,4-DINITROPHENOL	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P048						SH	PHENOL,2,4-DINITRO-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P049							2,4-DITHIOURET		
P049							THIOIMIDOCARBONIC DIAMIDE		
P050					X	SH	ENDOSULFAN	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P050					X	SH	5-NORBORNENE-2,3-DIMETHANOL,1,4,5,6,7,7-HEXACHLORO,CYCL	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P051					X		1,2,3,4,10,10-HEXACHLORO-6,7-EXPOXY-1,4,4A,5,6,7,8,8A-		
P051					X		ENDRIK		IF >1000 PPM, MUST BE INCINERATED (HOC)
P054							ETHYLENIMINE		IF >1000 PPM, MUST BE INCINERATED (HOC)
P054							AZIRIDINE		
P054							FLUORINE		
P057							FLUOROACETAMIDE		
P057							ACETAMIDE,2-FLUOR-		
P058					X	SH	FLUOROACETIC ACID, SODIUM SALT	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P058					X	SH	ACETIC ACID, FLUORO-, SODIUM SALT	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P059					X	SH	HEPTACHLOR	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P059					X	SH	4,7-METHANO-TH-INDENE,1,4,5,6,7,8,8-HEPTACHLORO-3A,4,7,	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P060							HEXACHLOROCYCLOHEXYL-ENDO,ENDO-DIMETHANONAPHTHALENE		
P062							1,2,3,4,10,10-HEXACHLORO-1,4,4A,5,6,8A-HEXAHYDRO-1,4:3,		
P062							HEXAETHYL TETRAPHOSPHATE		
P062							TETRAPHOSPHORIC ACID, HEXAETHYL ESTER		
P063						SH	HYDROCYANIC ACID	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P063						SH	HYDROGEN CYANIDE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P064							METHYL ISOCYANATE		
P064							ISOCYANIC ACID, METHYL ESTER		
P065	HSP	NLP					FULMINIC ACID, MERCURY (II) SALT (R,T)	MAY NOT BE RECEIVED AT CMH-EMELLE	
P065	HSP	NLP					MERCURY FULMATE (R,T)	MAY NOT BE RECEIVED AT CMH-EMELLE	
P066							METHANOL		
P066							ACETIMIDIC ACID, N-[(METHYLCARBAMOYL)OXY]THIO-,METHYL E		
P067							2-METHYLAZIRIDINE		
P067							1,2-PROPYLENIMINE		
P068						SH	HYDRAZINE,METHYL-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P068						SH	METHYL HYDRAZINE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P069						SH	5-DIBUTYL-2,2-DIMETHYL-1,3-DIOXANE		

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EPA Waste Code Restrictions at CWM-Emelle
Updated November 28, 1988, John Slusser
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requirements and procedures.

EPA Haz Waste Code	Storage (Emelle) if blank	Landfill (Emelle) if blank	Calif Sol- or/na List Ban?	First or/na HOC Ban?	Is it a Banned Waste?	Name of Description	CWM - Emelle, Alabama Requirements General comments regarding requirements that are in addition to, or summarizing the information in the columns to the left.	Federal EPA Land ban and Regulatory Treatment standards and variance information. This is IN ADDITION to any prohibitions or restrictions in columns to the left.
P069					SH	PROPANEITRILE, 2-HYDROXY-2-METHYL-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P070					SH	PROPANAL, 2-METHYL-2-(METHYLTHIO)-, O[(METHYLAMINO)CARBO	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P070					SH	ALDICARB	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P071					SH	O,O-DIMETHYL O-P NITROPHENYL PHOSPHOROTHIOATE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P071					SH	METHYL PARATHION	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P072						ALPHA-NAPHTHYLTHIOUREA		
P072						THIOUREA, 1-NAPHTHYLENYL-		
P073						NICKEL TETRACARBONYL		
P073						NICKEL CARBOHYL		
P074		HLP				NICKEL(II)CYANIDE	MAY BE STORED IN CONTAINERS, NO LANDFILL	
P074		HLP				NICKEL CYANIDE	MAY BE STORED IN CONTAINERS, NO LANDFILL	
P075						NICOTINE AND SALTS (T)		
P075						PYRIDINE, (3)-3-(1-METHYL-2-PYRROLIDINYL)-, AND SALTS		
P076						NITROGEN (II) OXIDE (T)		
P076						NITRIC OXIDE (T)		
P077						NITROANILINE (T) (P-NITROTOLUENE OILY)		
P077						BENZENAMINE, 4-NITRO-		
P078						NITROGEN (IV) OXIDE		
P078						NITROGEN DIOXIDE		
P081	HSP	HLP			SH	NITROGLYCERINE (R,T)	MAY NOT BE RECEIVED AT CWM-EMELLE	CERT & DEMONSTRATION REQUIRED
P081	HSP	HLP			SH	1,2,3-PROPANETRIOL, TRINITRATE-(R)	MAY NOT BE RECEIVED AT CWM-EMELLE	CERT & DEMONSTRATION REQUIRED
P082					SH	DIMETHYLNITROSAMINE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P084					SH	N-NITROSODIMETHYLAMINE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P084					SH	ETHENAMINE, N-METHYL-N-NITROSO-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P084					SH	N-NITROSOMETHYL VINYLAMINE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P085						DIPHOSPHORAMIDE, OCTAMETHYL-		
P085						OCTAMETHYL PYROPHOSPHORAMIDE		
P087					SH	OSMIUM TETROXIDE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P087					SH	OSMIUM OXIDE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P088						ENDOTALL		
P088						7-OXABICYCLO[2.2.1]HEPTANE-2,3-DICARBOXYLIC ACID		
P089					SH	PARATHION (T)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P089					SH	PHOSPHOROTHIOIC ACID, O,O-DIETHYL O-(P-NITROPHENYL) ESTE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P092					SH	MERCURY, (ACETATO-O)PHENYL-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P092					SH	PHENYL MERCURIC ACETATE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P093						PHENYLTHIOUREA (N-PHENYLTHIOUREA OILY)		
P093						THIOUREA, PHENYL-		
P094					SH	PHOSPHOROTHIOIC ACID, O,O-DIETHYL S-(ETHYLTHIO) METHYL	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P094					SH	PHORATE (T)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P095						PHOSGENE (T)		
P095						CARBONYL CHLORIDE		
P096						HYDROGEN PHOSPHIDE		
P096						PHOSPHINE		
P097					SH	FAMPHUR	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P097					SH	PHOSPHOROTHIOIC ACID, O,O-DIMETHYL O-(P-[[DIMETHYLAMINO	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
P098	HSP	HLP				POTASSIUM CYANIDE	MAY NOT BE RECEIVED AT CWM-EMELLE	
P099	HSP	HLP				POTASSIUM SILVER CYANIDE	MAY NOT BE RECEIVED AT CWM-EMELLE	

(PA Waste Code Restrictions at CWM-Emelle
Updated November 28, 1988, John Stammer
Call 205 - 852-9771 for details about the CWM-Emelle
requirements and procedures.

PA Waste Code	Storage at Emelle if Blank	Landfill at Emelle if Blank	Solvent Ban?	Calif. List Ban?	First Third Waste?	Is it a Hazardous Waste?	Name of Description	CWM - Emelle, Alabama Requirements General comments regarding requirements that are in addition to, or summarizing the information in the columns at left.	Federal EPA Land Ban and Regulatory treatment standards and variance information This is IN ADDITION to any prohibitions or restrictions in columns to the left.
U001					SH		ACRYLAMIDE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U008							2-PROPENOIC ACID (I)		
U008							ACRYLIC ACID (S)		
U005					SH		2-PROPENETRILE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U009					SH		ACRYLOESTERILE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U010					SH		WITDMYCIN C	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U010					SH		AZIRINO(2',3':2,4)PYRROLO(1,2-A)INDOLE-4,7-DIONE, 6-AHIN	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U011							IN-1,2,4-TRIAZOL-3-AMINE		
U011							AMITROLE		
U012					SH		BENZENAMINE (1,1)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U012					SH		ANILINE (S,1)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U014							ALPHAMINE		
U014							BENZENAMINE, 4,4'-CARBOHEXYDOLBIS(H,N-DIMETHYL-1-SENE, DIAZOACETATE (ESTER)		
U015							AZADERSNE		
U016					SH		BENZICACRIDINE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U016					SH		3,4-BENZACRIDINE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U017							BENAL CHLORIDE		
U017							BENZENE, (DICHLOROMETHYL)-		
U018					SH		BENZ(A)ANTHRACENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U018					SH		1,2-BENZANTHRACENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U019					SH		BENZENE (I, T)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U020	HSP	HLP					BENZENESULFONYL CHLORIDE (C,R)	MAY NOT BE RECEIVED AT CWM-EMELLE	
U020	HSP	HLP					BENZENESULFONIC ACID CHLORIDE (C,R)	MAY NOT BE RECEIVED AT CWM-EMELLE	
U021							BENZIDINE		
U021							(1,1'-BSPHENYL)-4,4''-DIAMINE		
U022					SH		BENZO(A)PYRENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U022					SH		3,4-BENZOPYRENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U023	HSP	HLP					BENZOTRICHLORIDE (C,R,T)	MAY NOT BE RECEIVED AT CWM-EMELLE	
U023	HSP	HLP					BENZENE, (TRICHLOROMETHYL)-(C,R,T)	MAY NOT BE RECEIVED AT CWM-EMELLE	
U024					X		BIS(2-CHLOROETHOXY) METHANE		IF >1000 PPM, MUST BE INCINERATED (HCC)
U024					X		ETHANE, 1,1'-[METHYLENEBIS(OXY)]BIS[2-CHLORO-DICHLOROETHYL ETHER		IF >1000 PPM, MUST BE INCINERATED (HCC)
U025							ETHANE, 1,1'-OXYBIS[2-CHLORO-2-NAPHTHYLAMINE,N,N-BIS(2-CHLOROMETHYL)-CHLORNAPHAZINE		
U026							CHLORNAPHAZINE		
U027							PROPANE, 2,2'-OXYBIS[2-CHLORO-BIS(2-CHLOROISOPROPYL)ETHER		
U027							BIS(2-ETHYLHEXYL) PHTHALATE		
U028							1,2-BENZHEDECARBOXYLIC ACID, [BIS(2-ETHYLHEXYL)LESTER		
U029					X	SH	METHANE, BROMO-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U029					X	SH	METHYL BROMIDE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U030							4-BROMOPHENYL PHENYL ETHER		
U030							BENZENE, 1-BROMO-4-PHENOXY-		
U031					SH		1-BUTANOL (I)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U031					SH		N-BUTYL ALCOHOL (I)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U032							CALCIUM CHROMATE		
U032									

EPA Waste Code Restrictions at CMH-Emelle
Updated November 28, 1988, John Stiemer
Call 205 - 652-9721 for details about the CMH-Emelle
requirements and procedures.

EPA Waste Code	Storage OR at Emelle if blank	Landfill OR at Emelle if blank	Sol- vent Ban?	Calif orria List Ban?	First Third ? Banned Waste?	Is It a Waste?	Name of Description	CMH - Emelle, Alabama Requirements General comments regarding requirements that are in addition to, or summarizing the information in the columns at left.	Federal EPA Land ban and Regulatory Treatment standards and variance information This is IN ADDITION to any prohibitions or restrictions in columns to the left
U033	HSP	HLP					CARBON DIFLUORIDE (R.I.)	MAY NOT BE RECEIVED AT CMH-EMELLE	
U034							CHLORAL		
U034							ACETALDEHYDE, TRICHLORO-		
U035							BUTANOIC ACID, 4-[BIS(2-CHLOROETHYL)AMINO]BENZENE-		
U035							CHLORAMBUCIL		
U036				X	SH		4,7-METHANOINDAN, 1,2,4,5,6,7,8,8-OCTA-CHLORO-3A,4,7,7A	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U036				X	SH		CHLORDANE, TECHNICAL	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U037				X	SH		CHLOROBENZENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U037				X	SH		BENZENE, CHLORO-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U038							ETHYL 4,4'-DICHLOROBENZILATE		
U038							BENZIENACETIC ACID, 4-CHLORO-ALPHA-4-CHLORO-PHENYL-ALP		
U039				X			PHENOL, 4-CHLORO-3-METHYL-		IF >1000 PPM, MUST BE INCINERATED (HOC)
U039				X			4-CHLORO-M-CRESOL		IF >1000 PPM, MUST BE INCINERATED (HOC)
U041				X	SH		OXIRANE, 2-(CHLOROMETHYL)-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U041				X	SH		1-CHLORO-2,3-EPIDYPROPANE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U042				X			ETHENE, 2-CHLOROETHOXY-		IF >1000 PPM, MUST BE INCINERATED (HOC)
U042				X			2-CHLOROETHYL VINYL ETHER		IF >1000 PPM, MUST BE INCINERATED (HOC)
U043				X	SH		ETHENE, CHLORO	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U043				X	SH		VINYL CHLORIDE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U044				X	SH		METHANE, TRICHLORO-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U044				X	SH		CHLOROFORM	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U045				X			METHANE, CHLORO-(1,1)		IF >1000 PPM, MUST BE INCINERATED (HOC)
U045				X			METHYL CHLORIDE (1,1)		IF >1000 PPM, MUST BE INCINERATED (HOC)
U046				X	SH		METHANE, CHLOROMETHOXY-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U046				X	SH		CHLOROMETHYL METHYL ETHER	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U047				X			NAPHTHALENE, 2-CHLORO-		IF >1000 PPM, MUST BE INCINERATED (HOC)
U047				X			BETA-CHLORONAPHTHALENE		IF >1000 PPM, MUST BE INCINERATED (HOC)
U048				X			PHENOL, 2-CHLORO-		IF >1000 PPM, MUST BE INCINERATED (HOC)
U048				X			O-CHLOROPHENOL		IF >1000 PPM, MUST BE INCINERATED (HOC)
U049				X			4-CHLORO-O-TOLUIDINE, HYDROCHLORIDE		IF >1000 PPM, MUST BE INCINERATED (HOC)
U049				X			BENZENAMINE, 4-CHLORO-2-METHYL-		IF >1000 PPM, MUST BE INCINERATED (HOC)
U050					SH		1,2-BENZOPHENANTHRENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U050					SH		CHRYSENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U051					SH		CRESOTE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U052							CRESYLIC ACID		
U052							CRESOLS		
U053					SH		2-BUTENAL	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U053					SH		CROTONALDEHYDE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U055							CUMENE (1)		
U055							BENZENE, (1-METHYLETHYL)-(1)		
U056							CYCLOHEXANE (1)		
U056							BENZENE, HEXAYORO- (1)		
U057							CYCLOHEXANONE (1)		
U058							ZN-1,3,2-DIAZAPHOSPHORINE, 2-[BIS(2-CHLOROETHYL)AMINO]-		
U058							CYCLOPHOSPHAMIDE		
U059							5,12-NAPHTHACENEDIONE, (85 CIS) 0-ACETYL(13-AMINO-2,3,8-		
U059							DAURAMYCIN		
U060									

EPA Waste Code Restrictions at CWM-Emelle
Updated November 28, 1988, John Steamer
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requirements and procedures.

EPA Waste Code	Storage - OK at Emelle if blank	Landfill - OK at Emelle if blank	Soil-bank?	Calif ornis List Ban?	First Third ?	Te Waste Name or Description	CWM - Emelle, Alabama Requirements General Comments regarding requirements that are in addition to, or summarizing the information in the columns at left.	Federal EPA Land ban and Regulatory Treatment standards and variance information This is IN ADDITION to any prohibitions or restrictions in columns to the left
U051					X SH	DOT	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U061					X SH	DICHLORO DIPHENYL TRICHLOROETHANE DIACETATE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U062						S-(2,3-DICHLOROALLYL) DIISOPROPYLTIOCARBAMATE		
U063					SH	DIBENZO[A,M]ANTHRACENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U063					SH	1,2,5,6-DIBENZOANTHRACENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U064					SH	DIBENZO[A,I]PYRENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U064					SH	1,2,7,8-DIBENZOPIRENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U065					X SH	PROPANE, 1,2-DIBROMO-3-CHLORO-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U066					X SH	1,2-DIBROMO-3-CHLOROPROPANE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U067					X SH	ETHYLENE DIBROMIDE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U067					X SH	ETHANE, 1,2-DIBROMO-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U068					X	METHANE, DIBROMO-		IF >1000 PPM, MUST BE INCINERATED (HCL)
U068					X	METHYLENE BROMIDE		IF >1000 PPM, MUST BE INCINERATED (HCL)
U069						DIBUTYL PHTHALATE		
U069						1,2-BENZENEDICARBOXYLIC ACID, DIBUTYL ESTER		
U070					X	O-DICHLOROBENZENE		IF >1000 PPM, MUST BE INCINERATED (HCL)
U070					X	BENZENE, 1,2-DICHLORO-		IF >1000 PPM, MUST BE INCINERATED (HCL)
U071					X	M-DICHLOROBENZENE		IF >1000 PPM, MUST BE INCINERATED (HCL)
U071					X	BENZENE, 1,3-DICHLORO-		IF >1000 PPM, MUST BE INCINERATED (HCL)
U072					X	P-DICHLOROBENZENE		IF >1000 PPM, MUST BE INCINERATED (HCL)
U072					X	BENZENE, 1,4-DICHLORO		IF >1000 PPM, MUST BE INCINERATED (HCL)
U073					X	(1,1'-BIPHENYL)-4,4'-DIAMINE, 3,3'-DICHLORO		IF >1000 PPM, MUST BE INCINERATED (HCL)
U073					X	3,3'-DICHLOROBENZIDINE		IF >1000 PPM, MUST BE INCINERATED (HCL)
U074					X SH	2-BUTENE, 1,4-DICHLORO-(1,T)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U074					X SH	1,4-DICHLORO-2-BUTENE (2,T)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U075					X	METHANE, DICHLOROFLUORO-		IF >1000 PPM, MUST BE INCINERATED (HCL)
U075					X	DICHLOROFLUOROMETHANE		IF >1000 PPM, MUST BE INCINERATED (HCL)
U076					X	ETHYLENE DICHLORIDE		IF >1000 PPM, MUST BE INCINERATED (HCL)
U076					X SH	ETHYLENE DICHLORIDE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U077					X SH	ETHANE, 1,2-DICHLORO-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U078					X SH	ETHENE, 1,1-DICHLORO-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U078					X SH	1,1-DICHLOROETHYLENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U079					X	ETHENE, TRANS-1,2-DICHLORO-		IF >1000 PPM, MUST BE INCINERATED (HCL)
U079					X	1,2-DICHLOROETHYLENE		IF >1000 PPM, MUST BE INCINERATED (HCL)
U080					X	METHANE, DICHLORO-		IF >1000 PPM, MUST BE INCINERATED (HCL)
U080					X	METHYLENE CHLORIDE		IF >1000 PPM, MUST BE INCINERATED (HCL)
U081	HLP				X	PHENOL, 2,4-DICHLORO-	MAY NOT BE RECEIVED AT CWM-EMELLE	IF >1000 PPM, MUST BE INCINERATED (HCL)
U081	HLP				X	2,4-DICHLOROPHENOL	MAY NOT BE RECEIVED AT CWM-EMELLE	IF >1000 PPM, MUST BE INCINERATED (HCL)
U082					X	PHENOL, 2,6-DICHLORO-		IF >1000 PPM, MUST BE INCINERATED (HCL)
U082					X	2,6-DICHLOROPHENOL		IF >1000 PPM, MUST BE INCINERATED (HCL)
U083					X	PROPYLENE DICHLORIDE		IF >1000 PPM, MUST BE INCINERATED (HCL)
U083					X	1,2-DICHLOROPROPANE		IF >1000 PPM, MUST BE INCINERATED (HCL)
U084					X	PROPENE, 1,3-DICHLORO-		IF >1000 PPM, MUST BE INCINERATED (HCL)
U084					X	1,3-DICHLOROPROPENE		IF >1000 PPM, MUST BE INCINERATED (HCL)
U085					X	2,2'-BIOXIRANE (1,T)		IF >1000 PPM, MUST BE INCINERATED (HCL)
U085					X	1,2,3,4-DIHYDROXIFURAN (1,T)		

EPA Waste Code Restrictions at CWM-Emelle
Updated November 20, 1988, John Slesser
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EPA Waste Code	Storage - OK at Emelle if blank	Landfill - OK at Emelle if blank	Sol- vent Ban?	Calif List Ban?	Fed HOC ?	First Third Banned Waste?	Is It a Waste water?	Name or Description	CWM - Emelle, Alabama Requirements General comments regarding requirements that are in addition to, or summarizing the information in the columns at left.	Federal EPA Land Ban and Regulatory Treatment standards and variance information. This is IN ADDITION to any prohibitions or restrictions in columns to the left.
U088						SH		N,N-DIETHYLHYDRAZINE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U087								PHOSPHORODITHIOIC ACID, O,O-DIETHYL-, S-METHYL-ESTER		
U087								O,O-DIETHYL-S-METHYL-DITHIOPHOSPHATE		
U088								DIETHYL PHTHALATE		
U088								1,2-BENZENEDICARBOXYLIC ACID, DIETHYL ESTER		
U089						SH		4,4'-STILLBENEDIOL, ALPHA, ALPHA'-DIETHYL-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U089						SH		DIETHYLSTILLBESTROL	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U090								DIMYDROSAFROLE		
U090								BENZENE, 1,2-METHYLENEDIOLY-4-PROPYL-		
U091								(1,1'-BIPHENYL)-4,4'-DIAMINE,3,3'-DIMETHOXY-		
U091								3,3'-DIMETHOXYBENZIDINE		
U092								METHANAMINE, N-METHYL-(1)		
U092								DIMETHYLAMINE (1)		
U093								DIMETHYLAMINOAZOBENZENE		
U093								BENZENAMINE, N,N-DIMETHYL-4-PHENYLAZO-		
U094								7,12-DIMETHYLBENZ[<i>a</i>]ANTHRACENE		
U094								1,2-BENZANTHRACENE,7,12--DIMETHYL-		
U095								(1,1'-BIPHENYL)-4,4'-DIAMINE,3,3'-DIMETHYL-		
U095								3,3'-DIMETHYLBENZIDINE		
U098	HSP	HLP						HYDROPEROXIDE, 1-METHYL-PHENYLETHYL-(R)	MAY NOT BE RECEIVED AT CWM-EMELLE	
U096	HSP	HLP						ALPHA,ALPHA-DIMETHYLBENZYLHYDROPEROXIDE (R)	MAY NOT BE RECEIVED AT CWM-EMELLE	
U097								CARBAMOYL CHLORIDE, DIMETHYL-		
U097								DIMETHYLCARBAMOYL CHLORIDE		
U098								HYDRAZINE, 1,1-DIMETHYL-		
U098								1,1-DIMETHYLHYDRAZINE		
U099								HYDRAZINE, 1,2-DIMETHYL-		
U099								1,2-DIMETHYLHYDRAZINE		
U101								PHENOL,2,4-DIMETHYL-		
U101								2,4-DIMETHYLPHENOL		
U102								DIMETHYL PHTHALATE		
U102								1-2-BENZENEDICARBOXYLIC ACID, DIMETHYL ESTER		
U103						SH		SULFURIC ACID, DIMETHYL ESTER	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U103						SH		DIMETHYL SULFATE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U105						SH		2,4-DINITROTOLUENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U105						SH		BENZENE, 1-METHYL-2,4-DINITRO-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U106								2,6-DINITROTOLUENE		
U106								BENZENE, 1-METHYL-2,6-DINITRO		
U107								DI-N-OCTYL PHTHALATE		
U107								1-2-BENZENEDICARBOXYLIC ACID, DI-N-OCTYL ESTER		
U108						SH		1,4-DIETHYLENE DIOXIDE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U108						SH		1,4-DIOXANE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U109								HYDRAZINE, 1,2-DIPHENYL-		
U109								1,2-DIPHENYLHYDRAZINE		
U110								1-PROPANAMINE, N-PROPYL-(1)		
U110								DIPROPYLAMINE (1)		
U111								N-NITROSO-N-PROPYLAMINE		
U111								DI-N-PROPYLNITROSAMINE		
U112								ETHYL ACETATE (1)		

EPA Waste Code Restrictions at CWM-Emelle
Updated November 28, 1988, John Stimmer
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EPA Waste Code	Storage - Ok at Emelle if blank	Landfill - Ok at Emelle if blank	Soil Ban?	Calif List	First MOC	Is Banned Waste?	Name or Description	CWM - Emelle, Alabama Requirements General comments regarding requirements that are in addition to, or summarizing the information in the columns at left.	Federal EPA Land ban and Regulatory Treatment standards and variance information. This is IN ADDITION to any prohibitions or restrictions in columns to the left.
U113							2-PROPEHOIC ACID, ETHYL ESTER (1)		
U113							ETHYL ACRYLATE (1)		
U114							ETHYLENES(DITHIOCARBAMIC ACIDS), SALTS AND ESTERS		
U114							1,2-ETHANEDIYLBISCARBAMOYLTHIOIC ACID		
U115					SM		OXIRANE (1,1)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U115					SM		ETHYLENE OXIDE (1,1)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U116							ETHYLENE THIOUREA		
U116							2-IMIDAZOLIDINETRIONE		
U117							ETHYL ETHER (1)		
U117							ETHANE, 1,1'-OXYBIS-(1)		
U118							2-PROPEHOIC ACID, 2-METHYL-, ETHYL ESTER		
U118							ETHYL METHACRYLATE		
U119							ETHYL METHANESULFONATE		
U119							METHANESULFONIC ACID, ETHYL ESTER		
U120							FLUORANTHENE		
U120							BENZO[1,2,3-b]FLUORENE		
U121					X		TRICHLOROMONOFLUOROMETHANE		IF >1000 PPM, MUST BE INCINERATED (HOC)
U121					X		METHANE, TRICHLOROFLURO-		IF >1000 PPM, MUST BE INCINERATED (HOC)
U122					SM		FORMALDEHYDE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U122					SM		METHYLENE OXIDE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U123							FORMIC ACID (C,1)		
U123							METHANOIC ACID (C,1)		
U124					SM		FURAN (1)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U124					SM		FURFURAN (1)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U125							FURFURAL (1)		
U125							Z-FURANCARBOXYALDEHYDE (1)		
U126							1-PROPANOL,2,3-EPOXY-		
U126							GLYCIDYLALDEHYDE		
U127					X		HEXACHLOROBENZENE		IF >1000 PPM, MUST BE INCINERATED (HOC)
U127					A		BENZENE, HEXACHLORO-		IF >1000 PPM, MUST BE INCINERATED (HOC)
U128					X		HEXACHLOROCYCLOHEPTADIENE		IF >1000 PPM, MUST BE INCINERATED (HOC)
U128					A		1,3-BUTADIENE,1,1,2,3,4,4-HEXACHLORO-		IF >1000 PPM, MUST BE INCINERATED (HOC)
U128					A		HEXACHLOROCYCLOHEPTANE (GAMMA ISOMER)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	IF >1000 PPM, MUST BE INCINERATED (HOC)
U129					A	SM	LITHIUM	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U130					X	SM	HEXACHLOROCYCLOPENTADIENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U130					A	SM	1,3-CYCLOPENTADIENE,1,2,3,4,5,5-HEXA-CHLORO-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U131					X		HEXACHLOROETHANE		IF >1000 PPM, MUST BE INCINERATED (HOC)
U131					A		ETHANE,1,1,1,2,2,2-HEXACHLORO-		IF >1000 PPM, MUST BE INCINERATED (HOC)
U132							HEXACHLOROPHENE		
U132							2,2-METHYLENBIS(3,4,6-TRICHLOROPHENOL)		
U133	HSP	HLP			SM		HYDRAZINE (R,T)	MAY NOT BE RECEIVED AT CWM-EMELLE	CERT & DEMONSTRATION REQUIRED
U133	HSP	HLP			SM		DIAMINE (R,T)	MAY NOT BE RECEIVED AT CWM-EMELLE	CERT & DEMONSTRATION REQUIRED
U134					SM		HYDROGEN FLUORIDE (C,1)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U134					SM		HYDROFLUORIC ACID (C,1)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U135	HSP	HLP					SULFUR HYDRIDE	MAY NOT BE RECEIVED AT CWM-EMELLE	CERT & DEMONSTRATION REQUIRED
U135	HSP	HLP					HYDROGEN SULFIDE	MAY NOT BE RECEIVED AT CWM-EMELLE	
U136							HYDROXYDIMETHYLARSINE OXIDE		
U136							ETHYLENE OXIDE		

EPA Waste Code Restrictions at CWM-Emelle
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EPA Waste Code	Storage - OK at Emelle if blank	Landfill - OK at Emelle if blank	Soil-ban?	Calif. List Ban?	First Third Banned?	Is Waste water?	Name or Description	CWM - Emelle, Alabama Requirements General comments regarding requirements that are in addition to, or summarizing the information in the columns at left.	Federal EPA Land ban and Regulatory treatment standards and variance information. This is in ADDITION to any prohibitions or restrictions in columns to the left.
U137							DEHO[1,2,3-CO]PYRENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U138				X			METHANE, IODO-		IF >1000 PPM, MUST BE INCINERATED (HCL)
U139				X			METHYL IODIDE		IF >1000 PPM, MUST BE INCINERATED (HCL)
U139							FERRIC DEXTRAM		
U139							IRON DEXTRAM		
U140							1-PROPANOL,2-METHYL- (1,1)		
U140							ISOBUTYL ALCOHOL (1,1)		
U141							ISOBUTYLENE		
U141							BENZENE, 1,2-METHYLENE-DIOXY-4-PROPYL-		
U142				X			KEPONE		IF >1000 PPM, MUST BE INCINERATED (HCL)
U142				X			DECACHLORO-OCTAHYDRO-1,3,4-METHENO-2H-CYCLOBUTA(C,D)-PENE		IF >1000 PPM, MUST BE INCINERATED (HCL)
U143							LASIODAMPINE		
U144							LEAD ACETATE		
U144							ACETIC ACID, LEAD SALT		
U145							PHOSPHORIC ACID, LEAD SALT		
U145							LEAD PHOSPHATE		
U146							LEAD SUBACETATE		
U147							2,5-FURANDIONE		
U147							MALEIC ANHYDRIDE		
U148							MALEIC HYDRAZIDE		
U148							1,2-DIHYDRO-3,8-PYRIDAZINEDIONE		
U149							PROPANEDINITRILE		
U149							MALONONITRILE		
U150							MELPHALAN		
U150							ALANINE, 3-[P-BIS(2-CHLOROETHYL)AMINO] PHENYL-L-		
U151							MERCURY	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U152							PROPENITRILE,2-METHYL- (1,1)		
U152							METHACRYLONITRILE (1,1)		
U153							THIOMETHANOL (1,1)		
U153							METHANETHIOL (1,1)		
U154							METHANOL (1)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U154							METHYL ALCOHOL (1)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U155							PYRIDINE, 2-[(2-DIMETHYLAMINO)ETHYL]-2-PHENYLAMINO-		
U155							METHAPYLENE		
U156							METHYL CHLOROCARBONATE (1,1)		
U156							CARBONCHLORIDIC ACID, METHYL ESTER (1,1)		
U157							3-METHYLCHOLANTHRENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U157							BENZ[JJ]ACEANTHRYLENE, 1,2-DIHYDRO-3-METHYL-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U158				X			4,4'-METHYLENEBIS(2-CHLORANILINE)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U158				X			BENZENAMINE, 4,4'-METHYLENEBIS(2-CHLORO-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U159							METHYL ETHYL KETONE (1,1)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U159							2-BUTANONE (1,1)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U160	HSP	HLP					METHYL ETHYL KETONE PEROXIDE (R,1)	MAY NOT BE RECEIVED AT CWM-EMELLE	
U160	HSP	HLP					2-BUTANONE PEROXIDE (R,1)	MAY NOT BE RECEIVED AT CWM-EMELLE	
U161							4-METHYL-2-PENTANONE (1)		
U161							METHYL ISOBUTYL KETONE (1)		
U162							2-PROPENOIC ACID, 2-METHYL-, METHYL ESTER (1,1)		
U162							METHYL 2-PROPENOATE (1,1)		

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EPA Waste Code	Storage - On at Emelle if blank	Landfill - On at Emelle if blank	Sol- vent Ban?	Calif List Ban?	Fed HOC Ban?	First Third Waste?	Is it a Waste?	Name of Description	CWM - Emelle, Alabama Requirements (General) comments regarding requirements (that are in addition to, or summarizing the information in the columns to the left.	Federal EPA Land Ban and Regulatory Treatment standards and variance information. This is IN ADDITION to any prohibitions or restrictions in columns to the left.
U219							SH	CARBAMIDE, THIO-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U220							SH	TOLUENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U220							SH	BENZENE, METHYL-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U221							SH	TOLUENEDIAMINE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U221							SH	DIAMINOTOLUENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U222								O-TOLUIDINE HYDROCHLORIDE		
U222								BENZENAMINE, 2-METHYL-,HYDROCHLORIDE		
U223	HSP	HLP					SH	TOLUENE DIISOCYANATE (R,T)	MAY NOT BE RECEIVED AT CWM-EMELLE	CERT & DEMONSTRATION REQUIRED
U223	HSP	HLP					SH	BENZENE, 1,3-DISOCYANATOMETHYL- (R,T)	MAY NOT BE RECEIVED AT CWM-EMELLE	CERT & DEMONSTRATION REQUIRED
U225							X	METHANE, TRIBROMO-		IF >1000 PPM, MUST BE INCINERATED (MX)
U225							X	BROMOFORM		IF >1000 PPM, MUST BE INCINERATED (MX)
U226							X SH	1,1,1-TRICHLOROETHANE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U226							X SH	METHYLCHLOROFORM	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U227							X SH	1,1,2-TRICHLOROETHANE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U227							X SH	ETHANE, 1,1,2-TRICHLORO-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U228							X SH	TRICHLOROETHYLENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U228							X SH	TRICHLOROETHENE	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U234	HSP	HLP						SYN-TRINITROBENZENE (R,T)	MAY NOT BE RECEIVED AT CWM-EMELLE	
U234	HSP	HLP						BENZENE, 1,3,5-TRINITRO- (R,T)	MAY NOT BE RECEIVED AT CWM-EMELLE	
U235								1-PROPANOYL, 2,3-DIBROMO-,PHOSPHATE (3,1)		
U235								TRIS(2,3-DIBROMOPROPYL) PHOSPHATE		
U236								TRYPTAN BLUE		
U236								2,7-NAPHTHALENEDISULFONIC ACID, 3,3'-[(3,3'-DIMETHYL)-		
U237							X SH	URACIL MUSTARD	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U237							X SH	URACIL, 5-[BIS(2-CHLOROETHYL)-AMINO]-	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U238							SH	ETHYL CARBAMATE (URETHAN)	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U238							SH	CARBAMIC ACID, ETHYL ESTER	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U239								XYLENE (S)		
U239								BENZENE, DIMETHYL- (1,1)		
U240	HSS	HLS					X	2,4-D, SALTS AND ESTERS	MUST BE INCINERATED TO BE LANDFILLED	INCINERATION PREFERRED
U240	HSS	HLS					X	2,4-DICHLOROPHENOXYACETIC ACID, SALTS AND ESTERS	MUST BE INCINERATED TO BE LANDFILLED	INCINERATION PREFERRED
U243	HSP	HLP					X	1-PROPENE, 1,1,2,3,3,3-HEXACHLORO-	MAY NOT BE RECEIVED AT CWM-EMELLE	IF >1000 PPM, MUST BE INCINERATED (MX)
U243	HSP	HLP					X	HEXACHLOROPROPENE	MAY NOT BE RECEIVED AT CWM-EMELLE	IF >1000 PPM, MUST BE INCINERATED (MX)
U244								THIRAN		
U244								BIS(DIMETHYLTHIOCARBAMOYL) DISULFIDE		
U246	HSP	HLP						BROMINE CYANIDE	MAY NOT BE RECEIVED AT CWM-EMELLE	
U246	HSP	HLP						CYANOGEN BROMIDE	MAY NOT BE RECEIVED AT CWM-EMELLE	
U247							X	ETHANE, 1,1,1,1-TRICHLORO-2,2-BIS(P-HETHOXYPHENYL)		IF >1000 PPM, MUST BE INCINERATED (MX)
U247							X	METHOXYCHLOR		IF >1000 PPM, MUST BE INCINERATED (MX)
U248							SH	WARFARIN WHEN PRESENT AT CONCENTRATIONS OF 0.3% OR LESS	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U248							SH	3-(ALPHA-ACETOXYL)BENZYL,4-HYDROXYCOUMARIN AND SALTS,	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U249							SH	ZINC PHOSPHIDE WHEN PRESENT AT CONCENTRA OF 10% OR LESS	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
U278	HSP	HLP						2-AMINO-L-METHYLBENZENE	MAY NOT BE RECEIVED AT CWM-EMELLE	
U278	HSP	HLP						O-TOLUIDINE	MAY NOT BE RECEIVED AT CWM-EMELLE	
U253	HSP	HLP						4-AMINO-L-METHYLBENZENE	MAY NOT BE RECEIVED AT CWM-EMELLE	
U253	HSP	HLP						P-TOLUIDINE	MAY NOT BE RECEIVED AT CWM-EMELLE	
U255	HSP	HLP						2-ETHANETHANONE	MAY NOT BE RECEIVED AT CWM-EMELLE	
U255	HSP	HLP						ETHYLENE GLYCOL DIMETHYL ETHER	MAY NOT BE RECEIVED AT CWM-EMELLE	

EPA Waste Code Restrictions at CMI-Ewelle
 Updated November 28, 1988. John Slammer
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EPA Waste Code	Storage of blank	Landfill of blank	Calif. Solvent List	First Hand Waste?	Is it a Banned Waste?	CMI - Ewelle, Alabama Requirements	Federal EPA Land ban and Regulatory treatment standards and variance information
0153							
0154							
0155							
0156							
0157							
0158							
0159							
0160							
0161							
0162							
0163							
0164							
0165							
0166							
0167							
0168							
0169							
0170							
0171					SH	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
0172					SH	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
0173							
0174							
0175							
0176							
0177					SH	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
0178					SH	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
0179							
0180							
0181					SH	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
0182							
0183							
0184							
0185					X		IF >1000 PPM, MUST BE INCINERATED (HOC)
0186					X		IF >1000 PPM, MUST BE INCINERATED (HOC)
0187					X		IF >1000 PPM, MUST BE INCINERATED (HOC)
0188					X	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
0189					X	SOFTHAMMER CERT & DEMONSTRATION REQUIRED	CERT & DEMONSTRATION REQUIRED
0190							
0191							
0192							
0193							
0194							
0195							
0196							
0197							
0198							
0199	HP	HP				MAY NOT BE RECEIVED AT CMI-EWELLE	

EPA Waste Code Restrictions at CMI-Emelle
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PK	Storage	Landfill	Calif	Finc	Is					CMI - Emelle, Alabama Requirements	Federal EPA Land and Regulatory Treatment
Waste	Code	if blank	General Comments regarding requirements that are in addition to, or summarizing the information in the columns at left.	standards and variance information. This is in ADDITION to any prohibitions or restrictions in columns to the left.							
Waste Code											
U189	HSP	HLP									
U190											
U191											
U192						X	SH				
U193						X	SH				
U194											
U195											
U196											
U197											
U200							SH				
U201							SH				
U202											
U203											
U204											
U205	HSP	HLP									
U206	HSP	HLP									
U207											
U208						X					
U209						X	SH				
U210						X	SH				
U211						X	SH				
U212						X	SH				
U213											
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APPENDIX E. VIEWGRAPHS USED BY W. E. KENNEDY, JR.

APPLIED MODELING STUDIES TO DEVELOP
RADIOLOGICAL RELEASE CRITERIA

W. E. KENNEDY, JR.

PACIFIC NORTHWEST LABORATORY

OUTLINE

- OVERVIEW OF REG. GUIDE 1.86 APPROACH
- FEATURES OF MODELING STUDIES
- OTHER NRC STUDIES (O'Donnell et al.)
- IAEA EXEMPTION STUDIES
- OTHER INTERNATIONAL STUDIES
- DERIVED CRITERIA RANGES
- SUMMARY

INTRODUCTION

EXISTING RADIOLOGICAL RELEASE CRITERIA (e.g., Reg. Guide 1.86, ANSI N13.12) ARE BASED ON TECHNICAL JUDGMENT CONCERNING DETECTABILITY AND SIMPLE MODELING. MORE RECENT STUDIES STRIVE FOR CONSISTENT HEALTH PROTECTION USING MODELING APPROACHES. THIS PAPER DESCRIBES SOME IMPORTANT FEATURES OF THESE STUDIES.

REGULATORY GUIDE 1.86

Termination of Operating Licenses for Nuclear Reactors, dpm/100 cm²

<u>Nuclide</u>	<u>Average</u>	<u>Maximum</u>	<u>Removable</u>
U-nat, ²³⁵ U, ²³⁸ U, and Decay Products	5,000 α	15,000 α	1,000 α
TRU, ²²⁶ Ra, ²²⁸ Ra, ²³⁰ Th, ²²⁸ Th, ²³¹ Pa, ²²⁷ Ac, ¹²⁵ I, ¹²⁹ I	100	300	20
Th-nat, ²³² Th, ⁹⁰ Sr, ²²³ Ra, ²²⁴ Ra, ²³² U, ¹²⁶ I, ¹³¹ I, ¹³³ I	1,000	3,000	200
Other β γ	5,000	15,000	1,000

REG. GUIDE 1.86, ANSI N13.12 - BASIS

- INGESTION - ^{90}Sr LIMIT ARBITRARILY TAKEN AS 1,000 DPM/100 CM^2 TO APPROXIMATE FALLOUT CONCENTRATIONS - OTHER NUCLIDE VALUES USING INGESTION MPCs
- INHALATION - SET LOWEST VALUE TO 100, OTHER NUCLIDES USING INHALATION MPCs
- FACTOR OF 3 FOR AVERAGE TO MAXIMUM LEVEL REFLECTS A HALF-SCALE DEFLECTION OF A LOG-BASED INSTRUMENT

REG. GUIDE 1.86 - ANSI N13.12 PROBLEMS

- NO CONSISTENT DOSE OF RISK BASIS
- LIMITED EXPOSURE PATHWAYS - NO EXTERNAL EXPOSURE COMPONENT, ICRP 2
- BROAD GROUPINGS HAVE ^{60}Co AND ^{99}Tc IN THE SAME GROUP
- DETECTABILITY VARIES WIDELY UNDER COMPLEX FIELD CONDITIONS
- FIXED VS. REMOVABLE IS HARD TO DETERMINE FOR LONG TERM

FEATURES OF MODELING STUDIES

- PERMIT USE OF CONSTANT DOSE/RISK, ICRP 30
- ESTABLISH SCENARIOS FOR WORKERS AND MEMBERS OF THE PUBLIC
- CAN ESTIMATE MAXIMUM INDIVIDUAL AND COLLECTIVE DOSE
- EXTERNAL EXPOSURE, INHALATION, INGESTION PATHWAYS TAILORED FOR DIFFERENT CASES
- DIFFERENT MATERIALS WITH BULK OR SURFACE ACTIVITY

OTHER NRC STUDIES

- NUREG/CR-0134: O'Donnell et al. - RECYCLE OF METALS FROM DECOMMISSIONING (1979)
 - GENERIC EVALUATION OF POTENTIAL DOSE FROM RECYCLE (MAXIMUM INDIVIDUAL)
 - RANKING OF RADIONUCLIDES ACCORDING TO POTENTIAL DOSE TO MAN
 - SIX SCENARIOS INVOLVING VARIOUS MATERIALS (COPPER, STEEL, IRON)
 - CONDOS COMPUTER CODE - EXTERNAL, INHALATION, AND INGESTION
 - LACKED SPECIFIC DOSE LIMITS

OTHER NRC STUDIES

- NUREG-0518: DRAFT EIS ON EXEMPTION FROM LICENSING OF SMELTED ALLOYS CONTAINING ^{99}Tc AND LOW-ENRICHED URANIUM
 - COSTS AND BENEFITS OF EXEMPTION OF SMELTED ALLOYS WITH 5 PPM ^{99}Tc AND 17.5 PPM LOW-ENRICHED URANIUM
 - DOSE DERIVED FROM RECYCLE AT UPPER CONCENTRATION LIMITS
 - GENERIC SCENARIOS TO ESTIMATE DOSE
 - LACKED SPECIFIC DOSE LIMITS

IAEA EXEMPTION STUDIES

- IAEA-TECDOC-401 (PART 1) (1987) REPLACED IN PART BY SAFETY SERIES 89 (1988) - "PRINCIPLES FOR EXEMPTION OF RADIATION SOURCES AND PRACTICES FROM REGULATORY CONTROL"
 - ON THE ORDER OF $10\ \mu\text{SV}$ (1 MREM) PER YEAR OF PRACTICE TO INDIVIDUALS
 - ABOUT 1 MAN · SV (100 MAN REM) COLLECTIVE DOSE COMMITMENT PER YEAR OF PRACTICE

IAEA EXEMPTION STUDIES

- IAEA-TECDOC-401 (PART 2) (1987) "TO ILLUSTRATE A GENERIC METHODOLOGY BY WHICH TO DEVELOP PRACTICAL RADIOLOGICAL CRITERIA FOR EXEMPTION OF WASTES TO SANITARY LANDFILLS OR INCINERATION:
- DRAFT CONSULTANTS' REPORT ON RECYCLE/REUSE (Kennedy, O'Donnell)
- FUTURE EFFORTS ON MEDICAL/INDUSTRIAL SOURCES

IAEA DRAFT ON RECYCLE/REUSE

- 16 RADIONUCLIDES IN SIX MAJOR GROUPINGS
- FOUR CATEGORIES OF MATERIALS: 1) STEEL RECYCLE, 2) ALUMINUM RECYCLE, 3) REUSE/RECYCLE OF CONCRETE, 4) REUSE OF TOOLS AND EQUIPMENT
- INDIVIDUAL AND COLLECTIVE DOSES
- INDUSTRIAL WORKERS, DOWNWIND RESIDENTS, CONSUMERS
- EXTERNAL EXPOSURE, INGESTION, INHALATION WITH ICRP 30 DOSE FACTORS

OTHER INTERNATIONAL STUDIES

- CEC (NOVEMBER 1988) RADIATION PROTECTION NO. 43
"RADIOLOGICAL PROTECTION CRITERIA FOR THE RECYCLING
OF MATERIALS FROM THE DISMANTLING OF NUCLEAR
INSTALLATIONS"
- CEC CONCLUDED THAT DOSE LIMITS POSE PRACTICAL
PROBLEMS; THUS, THEY USED MODELING TO SET "CLEARANCE"
LEVELS IN A CONSERVATIVE MANNER.

OTHER INTERNATIONAL STUDIES RECOMMENDED CEC CLEARANCE LEVELS

BETA-GAMMA • Bq/G (30 PCI/G) OVER 1 KG; NO SINGLE ITEM
> 10 Bq/G (300 PCI/G)

• 0.4 Bq/CM² (10 PCI/CM²) REMOVABLE OVER 300 CM²

ALPHA • 0.04 Bq/CM² (1.0 PCI/CM²) OVER 300 CM² OF ANY PART
OF SURFACE

OTHER INTERNATIONAL STUDIES FEDERAL REPUBLIC OF GERMANY

- SCENARIOS CAN NEVER BE CONSERVATIVE ENOUGH; A STOCHASTIC ANALYSIS WAS CONDUCTED USING IAEA DOSE LIMITS.
- UNRESTRICTED RELEASE:
 - 0.1 Bq/G (3 PCI/G) MASS AND 0.37 Bq/CM² (10 PCI/CM²) BETA-GAMMA OR 0.037 Bq/CM² (1 PCI/CM²) ALPHA
 - GENERAL MELTING, < 1 Bq/G (30 PCI/G) AND SAME SURFACE ACTIVITY LIMITS
- CONTROLLED RECYCLING - > 1 Bq/G (30 PCI/G), HARD TO MONITOR ITEMS, WITH PRODUCTS < 1 Bq/G (3 PCI/G)

DERIVED CRITERIA RANGES

PROBLEM: MATERIAL RELEASED FOR RECYCLE OR REUSE WILL ULTIMATELY BE SENT TO A LANDFILL; MATERIAL SENT TO A LANDFILL MAY BE SALVAGED AND RECYCLED OR REUSED.

SOLUTION: DERIVE OVERALL EXEMPT QUANTITIES ACCOUNTING FOR ALL TYPES OF EXEMPTION (LANDFILL OR INCINERATION, RECYCLE OR REUSE).

OVERALL COMPARISON

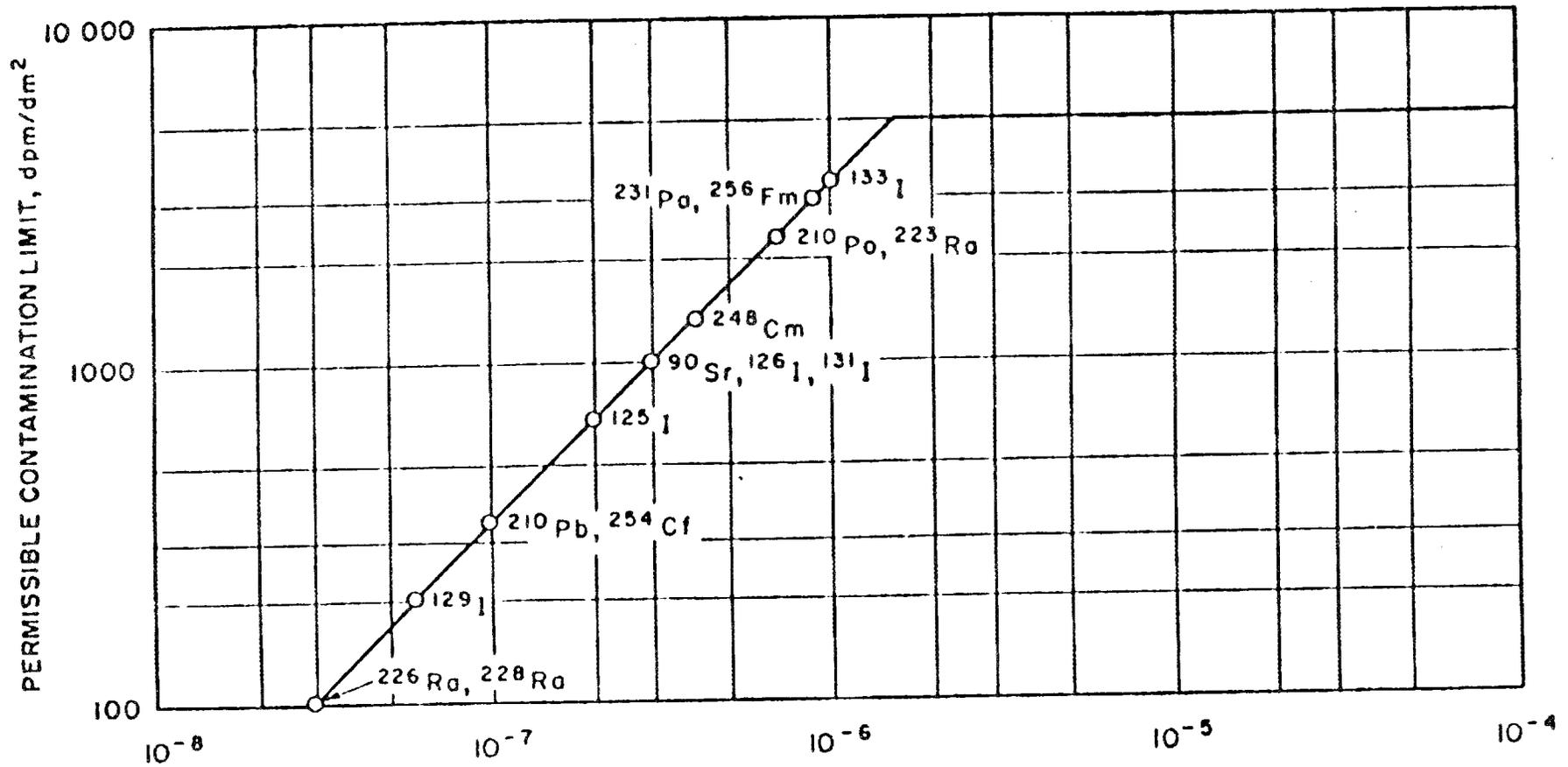
	Mass (Bq/g)			Surface (Bq/cm ²)		
	α	H-E γ	β , L-E γ	α	H-E γ	β , L-E γ
CEC	-	1	1	0.04*	0.4*	0.4*
FRG	-	0.1	0.1	0.037*	0.37*	0.37*
IAEA	1-10	1-10	100-1000	0.1-1.0	0.1-1.0	100-1000
RG 1.86	-	-	-	0.003-0.2	0.03-0.2	0.03-0.2

94

*IAEA removable contamination limits for transportation.

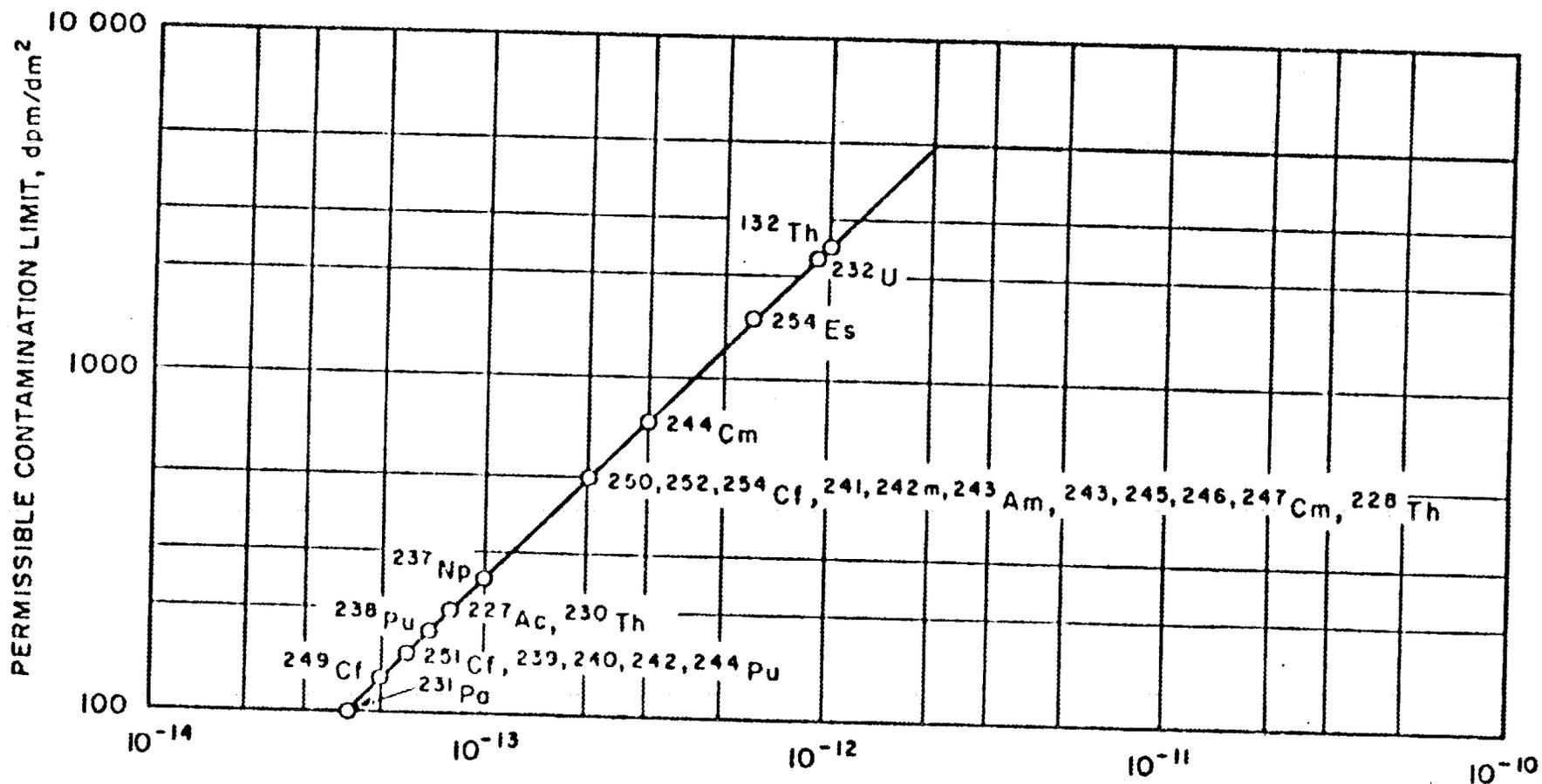
SUMMARY

- MODELING STUDIES CAN SUPPORT THE DERIVATION OF RELEASE CRITERIA.
- INTERNATIONAL PROGRESS BEYOND REG. GUIDE 1.86.
- CRITERIA DERIVED THROUGH MODELING MAY PROVE TO BE IMPRACTICAL FOR RADIATION DETECTION OR COST REASONS.
- A CONSISTENT, INTERNATIONAL APPROACH IS DESIRABLE.



NOTE: Maximum permissible concentration in water for continuous nonoccupational exposure, Ci/m³. From the *Code of Federal Regulations*, Title 10, Part 20, Appendix B, Table 2, Column 2, April 30, 1975.

Fig. B1
 Permissible Contamination Limits for
 Uncontrolled Areas Based on
 Possible Ingestion



NOTE: Maximum permissible concentration in air for continuous nonoccupational exposure, Ci/m³. From the *Code of Federal Regulations*, Title 10, Part 20, Appendix B, Table 2, Column 1, April 30, 1975.

Fig. B2
 Permissible Contamination Limits for
 Uncontrolled Areas Based on
 Possible Inhalation

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