PR 20,30,31,32,33,35,50,61,62,72,110,150,170, and 171
(71FR42952)

(1)

Comments on "Proposed Rule: Requirements for Expanded Definition of Byproduct Material", RIN:3150-AH84 SECY-06-0069

DOCKETED
USNRC

August 3, 2006 (3:10pm)

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

SECY@nrc.gov pdr@nrc.gov

From W C Salsbury

DOE/NRC Source Registration Issues

The location and owners of the various remaining Ra-226 sources are probably not in a centralized location. Finding these sources may require the assistance of the medical and university communities as well as evaluating the Superfund site list.

DOT Memo of Understanding with DOE/NRC

Is there a MOU between NRC and DOT on byproduct materials; and would it be impacted by this change?

Dosimetry Ra-226

Ra-226 is a naturally occurring material present in most city water supplies. How does the NRC propose to discriminate regulated dose from background dose, and normal levels of Ra-226 in building materials vs. regulated Ra-226 contamination? Also, because of radium's high excretion rate bioassay may need to perform weekly to monthly fecal analysis in order to suppress the missed dose to a value less than a few REM per year. Is this excessive cost acceptable? Would it be acceptable for licensee's to perform monthly urinanalysis if the missed dose was 2 REM/sample-month (i.e. 24 REM/year)? Argonne National Laboratories bioassay group can provide more detailed data. It is highly unlikely that licensees will be able to determine if a non-occupational individual received less than 100 mREM.

Financial Worthiness

Financial worthiness is unlikely to be an issue with accelerator users/operators, however, the financial risks incurred by Ra-226 users is probably substantial.

Acceptance of Material by Disposal Sites

Has NRC accepted the 5 pCi/gram of soil from http://www.boeing.com/defense-space/space/rdyne/shea/factsheets2005/SSFL_Area_IV_HSA_Volume_1.pdf as a DeMinimus volumetric Ra-226 contamination release value? Will the radioactive waste site licenses be changed to reflect the new regulated radioactive materials, if necessary? Since NRC has expanded its regulatory oversight is the responsibility of the waste site licensees to incur the cost of changing the license?

Radium Release Surveys may not be able to see acceptable release levels (20 dpm/100cm-2 or 500 dpm/100cm-2)

Actinide/Ra-226 surface contamination levels less than 1000-1500 dpm/100cm-2 are typically not detectable at 1-2 sigma counting statistics. Ra-226 captured in clothing/porous materials could have much higher counting errors. Has NRC accepted the

Template - SECY-067

SECY-02

technological shortfall (see DOE publications) for detection of Ra-226 and proposed an alternative?

Radium Use in Naval Warships as deck edge markers and disposal at naval bases

Pre WWII naval warships used radium luminescent buttons as deck edge markers. Several were discovered, buried in a field, at 32nd Street Naval Station in San Diego in the late 70-80s. These may not match NRC's descriptors of the various radium sources. Folklore has stories of large accumulations of the markers causing death. Also, there is a high likelihood of other Ra-226 uses which are lost to time. I would suggest that NRC expand the coverage of Ra-226 items beyond light sources in aircraft and medical uses. Will the full regulatory might of the NRC fall on the discoverer of unknown future Ra-226 items? How about financial responsibility?

Pre 2006 Disposal/loss of accelerator isotopes or Ra sources (Sources, shipwrecks, airplanes)

Do institutions/owners of past accelerators or Radium items have reporting requirement to NRC if they do not presently have control over the item? Shipwrecks/airplane wrecks with Radium dials is a case in point. Luminous dial instruments disposed of in a sanitary landfill might be another.

Radium 226 issues
Does this include daughters?

For source activity reporting and internal/external dosimetry, do the owners report any information about the daughters?

Can the most current ICRP/NCRP internal/external dosimetry standards be used as probably required by EPA and sometimes DOE?

Is ANSI/HPS N43.4-2000 Classification of Radioactive Self-Luminous Light Sources a reference document?

Recent ICRP changes have produced substantial changes in CEDE for actinide uptakes. Are the newer consensus standards acceptable to NRC?

ANL contaminated building and 134ish REM to decontamination worker

Argonne National Laboratory had a Ra-226 dosimeter calibration source breach in 1952ish. One individual received 134ish REM CEDE, and several others had substantial doses. The building where the breach occurred remains contaminated. NRC might gain an insight for contamination control issues/cost/dosimetry from this incident. Several folklore stories discuss Ra-226 breaches in hospitals. These areas, if the building remains, may remain contaminated. Remember that current equipment has difficulty detecting actinide contamination under 1000-1500 dpm/100cm-2, 1950s and 1960s equipment substantially under performed modern equipment. Therefore, if the Ra-226 breach occurred pre-1970's it is likely that contamination still exists. NRC has taken authority over all past, present and future Ra-226 sources. Does this include the contamination

resulting from a Ra-226 breach? ANL has several individuals who have participated in Ra-226 clean ups.

EPA or the State of Illinois has approved volumetric Ra-226 contaminated soil release levels (for a site in Chicago, bounded by Grand, Ohio and west of Fairbanks). Does NRC accept these DeMinimus values?

Breached sources, are pre 2006 contamination events under NRC jurisdiction

EPA was involved in the clean up of various Ra-226 contaminated sites (most were gas light facilities) in Illinois and probably Pennsylvania. Is NRC now responsible for these sites since the Ra-226 was deliberately concentrated? Since several are Superfund sites has NRC and EPA executed a MOU?

Disposal sites needed

Are there disposal sites which can inexpensively dispose of the consumer products and luminous light sources? If not abandonment may become the only method of disposal.

DeMinimus values needed, release criteria needed.

Acceptable DeMinimus values and release criteria need to be stated.

Gas light contaminated facilities and Superfund sites

A number of the gas light and luminous production sites are abandon and some are superfund sites. Does NRC have the financial ability to clean up these sites?

Invalidation of homeowners insurance

Many homeowner's insurance policies have disclaimers for hazardous materials. Will NRC regulation invalidate these homeowner's policies?

The Ra-226 issues are likely much larger than thought

The Radium-226 issues are likely to be much larger and broader than believed. Also, there are few consultants available with real world radium experience. Therefore, NRC may have to act as a resource to answer questions and resolve problems. Has NRC considered this possibility? See draft MARSAME document chapters C and D.

Caveats for D,T reactions, charge state and beryllium

Neutron generators using D,T reactions use a 4 MeV (2 MeV per nucleon) deuteron to produce up to a 12 MeV evaporation neutron. Is this an accelerator?

If NRC specifies the acceleration potential for licensing requirements only confusion can occur. For instance a 4 MeV Peletron will accelerate a nucleon to 4 MeV if only one electron is removed from the electronic shell (charge state). If 2 electrons are stripped then the acceleration energy will be 4 MeV X 2=8 MeV.

Certain materials (beryllium) have a low nuclear binding energy. As with neutron sources using a (gamma, N) reaction, particle beams can produce substantial neutron fluxes if they strike a beryllium target. Are the materials activated by these neutrons byproduct material or accelerator produced material?

Volumetric contamination of materials by activation/spallation and release criteria

Release criteria for the various accelerator produced isotopes needs to be developed.

Cathode ray tube TV sets are an out growth of early accelerators

The definition of accelerator needs improvement "Particle accelerator means any machine capable of accelerating electrons, protons, deuterons, or other charged particles in a vacuum and of discharging the resultant particles or other radiation into a medium at energies in excess of 1 megaelectron volt." See ANSI N43.1 "Standard Radiation Safety for the Design and Operation of Particle Accelerators" (currently in rewrite). While commercial TV sets operate at 0.035 MeV over zealous application of the rule might include just above any particle accelerator. It is also possible that any beta emitting source with energies greater than 1 MeV in a vacuum might be also considered an accelerator. Note that NRC is now regulating exotic particles such as muons; a search of 10CFR20 did not find any reference to muons. NRC should also expect to see extremity doses approaching 50 rem per year for the preparers of the accelerator produced medical isotope unit doses.

Beam energy in (MeV/nucleon)

For hadronic beams, the energy per nucleon may provide more useful information. For instance, a 1 MeV proton will have different activation potential than a U-238 nucleus with (collectively) 1 MeV.

DOE production of isotopes and radioactive isotope accelerators

DOE may enter the production of isotopes http://www.eh.doe.gov/nepa/eis/eis0310/volume1/chap2a.pdf (see page 7 first enclosure). Would this cause any likely problems?

License to distribute accelerators

Will NRC create a license to produce and distribute accelerators?

Extent of Jurisdiction, interlocks, software, metallurgical requirements, beam energy, ion species, etc.

What would NRCs extent of jurisdiction over accelerators extend to; beam energy, interlock requirements, minimization of activated/spallated materials, ion species accelerated/charge state, minimization of beryllium components (neutron spallation targets), etc.?

Transfer of accelerator parts between DOE, DOE owned/NRC regulated accelerators, and world wide researchers

An airplane is sometimes described as a loose collection of parts flying in formation. Any non-commercially built accelerator is likely to follow the same analogy. As accelerators acquire/donate parts to other machines; what parts will NRC regulate? Magnets, power supplies, RF cavities, beam pipe, nuts, bolts, wire, shielding, tools, etc.

EPA regulated space (i.e. disposal at sea, in space), treaties and Status of Forces agreements (both isotopes and accelerators)

If accelerators or accelerator isotopes are taken to sea or out of the U.S., what impact on the EPA's responsibilities, treaty requirements and Status of Forces agreements will occur? A case in point might be an electron microscope on a research vessel leaving the U.S. for foreign ports and returning, or an electron microscope accompanying a military hospital or the CDC during deployment, or metabolic (Na, Cl, K) studies with accelerator produced isotopes. Will activation from neutron radiography be an issue? If U.S. customs radiographs containers in foreign ports before being placed on shipboard, are there issues with this process, if the machine is greater than 1 MeV? How will replaced parts be handled; will all parts be controlled, can they be disposed of in a foreign state?

Does "accelerator" include all parts or just (potentially) activated parts

Who will decide?

Accelerators possibly not covered by NRC definition

Does NRC jurisdiction include particle beam weapons in space? (see Regan administration and Stars Wars projects)
Does NRC jurisdiction include the ion drive technologies being developed by NASA for interplanetary use?
Does NRC jurisdiction include Laser wake field accelerators http://physicsweb.org/articles/world/16/2/5 .

Releasable Nuclear Medicine Patients (I-131 therapy doses)

Since medical isotopes can produce initially very high doses from the exterior of the patient, are there any patient releasability issues; possibly paralleling the release of I-131 therapy patients? How about activated/spallated patients?

Inaccurate definition in Environmental Assessment for Proposed Rulemaking-Expanded Definition of Byproduct Material Established by Section 651(e) of the Energy Policy Act of 2005 (draft) page 10:

Particle accelerators may be separated into three functional groupings:

(1) those that are operated exclusively to intentionally produce radioactive material...
(2) those that produce only particle beams and not radioactive materials...
(3) those that intentionally produce both radioactive materials and particle beams

Where would accelerators which produce particle beams and unintentionally produce radioactive material fall in these descriptors? Most of the worlds high energy accelerators used for research do not intentionally produce isotopes. There are a few machines which produce particle beams for patient therapy/research, parasitically produce isotopes, and produce particle beams for scientific research. There are machines which are only performing a proof of concept, and are not producing beam or radioactive material for any reason except for R&D activities.

Accelerator Neutron Flux

Will NRC allow the use of the most current ANSI/IRCP/NCRP,etc neutron flux to dose conversion factors since the accelerator neutron spectrum may exceed the maximum energy in 10CFR20 of only 400 MeV?

Accelerator High Loss Areas and Beam Dumps

Most activation/spallation in accelerators occurs in high loss areas (the beam is accidentally dumped into an unintended area, high loss areas occur, beam diverters are struck by primary beam, or beam dumps are taking a lot of beam). Beam dumps can become very radioactive in higher energy machines. Caution should be exercised because the GM photon counting efficiency for photon only emitting radionuclides (somewhat common in accelerator environments) is 0.17 % vs. 30% for medium energy beta emitters.

Decay in Storage/Disposal for 10T1/2 and T1/2 < 120 days

Will NRC accept decay in storage and disposal for accelerator medical isotopes? Will this also apply to accelerator volumetrically activated/spallated component parts even if installed but with no beam being produced (if the machine has been off or in a low energy mode for months can this be used as decay in storage time)?

Will accelerator produced medical isotope users be able to ignore short lived isotopes? For instance, hundreds of thousands of F-18 disintegrations on the skin surface will produce only microrem doses to the skin or deep tissue.

From: jomba miteran <s_chp@yahoo.com>
To: <SECY@nrc.gov>, <pdr@nrc.gov>
Date: Fri, Apr 21, 2006 4:43 PM
Subject: RIN:3150-AH84 SECY-06-0069

Attached are my personal comments on RIN:3150-AH84
SECY-06-0069

W C Salsbury

Mail Envelope Properties (444943FA.CF8 : 0 : 31992)

Subject: RIN:3150-AH84 SECY-06-0069
Creation Date Fri, Apr 21, 2006 4:43 PM
From: jomba miteran <s_chp@yahoo.com>

Created By: s_chp@yahoo.com

Recipients
nrc.gov
owf5_po.OWFN_DO
SECY (SECY)

nrc.gov
OWGWPO02.HQGWDO01
PDR

From: Lydia Chang
To: Evangeline Ngbea
Date: Fri, Jul 28, 2006 3:58 PM
Subject: Fwd: RIN:3150-AH84 SECY-06-0069

Hi Van:

Now that the NARM Proposed Rule is published in the Federal Register (71 FR 42952; July 28, 2006), I think we should still docket this commenter's letter although it was sent prior back in April when we released the SECY-06-0069 on the draft proposed rule. Thanks...

Lydia C.

>>> SECY 04/25/2006 9:04:16 AM >>>
Lydia:

Here is a comment.

Van Ngbea

Mail Envelope Properties (44CA6D4D.2E4 : 11 : 10704)

Subject:	Fwd: Rulemaking, Byproduct Definitions....651 e
Creation Date	07/28/2006 4:02:21 PM
From:	Lydia Chang
Created By:	LWC1@nrc.gov

Recipients
nrc.gov
TWGWPO01.HQGWDO01
ESN (Evangeline Ngbea)

Post Office	**Route**
TWGWPO01.HQGWDO01	nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	587	07/28/2006 4:02:21 PM
TEXT.htm	567	
Mail		

Options

Expiration Date:	None
Priority:	Standard
ReplyRequested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard

Junk Mail Handling Evaluation Results
Message is not eligible for Junk Mail handling
Message is from an internal sender

Junk Mail settings when this message was delivered
Junk Mail handling disabled by User
Junk Mail handling disabled by Administrator
Junk List is not enabled
Junk Mail using personal address books is not enabled
Block List is not enabled