# CRCPD's Committee on Emergency Response Planning

Conference of Radiation Control Program Directors, Inc. (CRCPD)
**A Partnership Dedicated to Radiation Protection**

April 12, 2001

01 APR 16 PM 3:38 OSP

FRPCC Sub-Committee on Protective Action Guides
Attn: William C. Conklin
6608J
Environmental Protection Agency
Office of Radiation and Indoor Air
Ariel Rios Building
1200 Pennsylvania Avenue, NW
Washington DC 20460

**Subject:** Comments on EPA's Review Draft of EPA-400: Protective Action Guides for Nuclear Incidents, Revised 2000

The Emergency Response Planning Committee (E-6) appreciates the opportunity to comment on EPA's review draft of EPA-400 to the FRPCC Sub-Committee on Protective Action Guides..

In this letter, I have provided a synopsis of the comments I have received from E-6 members and other state radiation protection staff. This synopsis represents the view of the E-6 Committee rather than a Conference of Radiation Control Program Directors' position. They reflect written and verbal responses from Committee members and other state programs.

Detailed comments from several states are attached.

**Overall Document:**

We suggest that EPA should follow formal document revision processes for EPA 400 event though it is not "regulatory". Because it is referenced in FEMA documents, it is often applied as regulation rather than as guidance. The formal administrative process would permit more feedback from local, state, tribal, and federal users. EPA 400 is not just used in the FEMA REP program, but applies to all radiological emergencies, regardless of the type of facility.

The new style for the document generated mixed comments. Although the new style is very readable for new members of the Radiological Emergency Preparedness (REP) community, there is concern that some content was lost. It will be important to review the concepts presented to ensure that critical



**Office of the Committee Chairperson**
**Ronald G. Fraass**
Supervisor, Environmental Radiation and Emergency Preparedness
Kansas Radiation Control Program
Forbes Field, Building 283 • Topeka, Kansas 66620-0001
Telephone: 785/296-1569 • Fax: 785/296-0984
E-mail: rfraass@kdhe.state.ks.us • CRCPD Home Page: www.crcpd.org

STP-006 Template
RIDS DIST.: SP02

components are not missing from the simplified definitions and discussions.

Some reviewers indicated that there are references to documents or policies that are no longer current. A review by your contractor in light of the Addenda to 0654 and other more recent NRC and FDA documents may enable EPA-400 to reference the most current documents.

The changed order of chapters makes the manual more functional. Having all material pertinent to one phase of an emergency together in the manual will help users to easily locate information.

In several instances, the document touches on planning issues that are covered in NUREG 0654 and need not be included in EPA 400. Much of the recovery phase information may be planning material rather than protective action guidance.

Many actions will be taken in the emergency phase that impact on the intermediate and late phases. Tables that indicate actions may need to show this concept to be correct. Table 1.1 is an example.

Recent publications from both the Nuclear Regulatory Commission and the Food and Drug Administration on potassium iodide (KI) will require changes to the draft manual. Public and worker protective actions need to be consistent with FDA guidance. As an example, workers may need to be protected at 10 rem CDE rather than 25 and public evacuation may need to be at 1-5 rem CDE rather than 5-25.

Numerous tables were enlarged in content without explanation. The current EPA 400 did not include 50 year data in table 7-4 and included only primary isotopes. The draft includes hundreds of isotopes and also has a column for 50 year exposure to inhalation in table 3-6. Although the added radionuclides provide for greater precision in estimating doses, they may serve to add unnecessary complication to dose projections while providing limited actual dose to the public. Clear, concise assumptions about how the tables were derived are also needed.

**PAGs for Food:**

The final paragraphs in Chapter 5 are not consistent with FDA guidance. The DILs are to be applied independently rather than as stated on pages 5-12-13.

**PAGs for Water:**

The use of 4 millirem total effective dose equivalent as a PAG is not consistent with other PAGs in use by the United States and other countries. For many isotopes, analyses of samples to detect the DILs derived from this standard will require long counting times. Environmental radiation laboratories often count 12-24 hours to reach low detection levels. A PAG consistent with FDA or NRC recommendations or regulations would be more appropriate.

An individual that was evacuated and then permitted to return under current PAGs might be expected to receive 500 millirem from the plume and 1000 millirem from ground shine in the first year (half of each PAG). To then take action to restrict water consumption to protect from an added 2 millirem (half of the PAG) seems inappropriate. A similar concern might apply to those who were not evacuated or relocated but reside in an area of continued exposure.

As in the general document section, data for all potential isotopes may cause problems for laboratories and decision makers without adding significantly to dose projections. Consider providing a reduced number of isotopes that contribute the majority of the estimated dose to the public.

**PAGs for the Recovery Phase:**

While guidance from the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) is useful for clean-up activities at an industrial site, its use for hundreds of square miles of contaminated land may not be appropriate. Local, State, Tribal, and Federal experts will probably need to agree on actual recovery standards after an incident rather than in advance. The Advisory Team on Environment, Food, and Health will be an important part of such discussions. The suggested values for probabilistic risk in the 10E-4 to 10E-6 appear reasonable, but will require significant analyses to evaluate. There may be an ANSI committee looking at this issue and their recommendations may need to be added.

Thank you again for the opportunity to comment on this review draft.

Sincerely;

Ron Fraass

Ronald G. Fraass, Chair
Emergency Response Planning Committee (E-6)

Atch: State Comments

"David Snellings Jr." <dsnellings@HealthyArkansas.com>

01/16/2001 08:15

To: "'rfraass@kdhe.state.ks.us'" <rfraass@kdhe.state.ks.us>

cc: David Baldwin <dbaldwin@HealthyArkansas.com>, Donald Greene <dgreene@HealthyArkansas.com>

Subject: EPA draft PAG

Ron:

In response to your recent request, the Arkansas Division of Radiation Control and Emergency Management has reviewed the proposed revision of the EPA Protective Action Guides (PAGs) Manual, dated December 2000. The following comments are provided for your review and appropriate action:

1. The Division strongly supports the inclusion of the Water and Agricultural PAGs in the Manual.

2. The discussion on protective actions to be taken during the various phases of an emergency incident is summarized in Table 1.1, "Exposure Pathways, Incident Phases, and Protective Actions", page 1-6. This discussion infers that protective actions -"food and water controls" are not considered until the "Late" phase of an incident. This may not be correct. For example, placing animals on stored feed and water and embargoing potentially-contaminated foodstuffs from non-evacuated areas may actually be recommended during the "Early" phase.

3. The discussion on the administration of KI is summarized in Table 2.2, "PAGs for the Early Phase of a Nuclear Incident", page 2-3. This discussion uses the PAG (projected dose) of 25 rem (TEDE) and does not reflect the draft proposed guidance from the FDA contained in "Guidance-Potassium Iodide as a Thyroid Blocking Agent in Radiation Emergencies", dated December 2000. Certainly, these guidance documents must be consistent.

4. There appears to be a conflict between the proposed EPA PAG Manual and the Nuclear Regulatory Commission, "Response Technical Manual", RTM-96. The RTM makes a distinction between "sheltering" and "go indoors". Certainly, these guidance documents must be consistent.

5. There are typographical/editorial errors in the document, including the following:

a. Page 1-9, paragraph 1-7, NUREG-0684 rather than 0654

b. Page 2-3, paragraph 2.2 (last paragraph on page), Reference to Table 2-1 rather than 2.2

c. Page 2-13, Table 2-4, Item 8, Reference to Table 2-1 rather than Table 2-2

d. Page 2-14, Last Paragraph on page, Reference to Table 2-4 rather than Table 2-5

e. Page D-12, Second Paragraph on page, Typographical error on 131I

f. Page F-1, Third Paragraph on page, Typographical error on Table 2.

If you have questions, please contact me.

A. 1/1

STATE OF MICHIGAN

JOHN ENGLER, Governor

**DEPARTMENT OF ENVIRONMENTAL QUALITY**

*"Better Service for a Better Environment"*

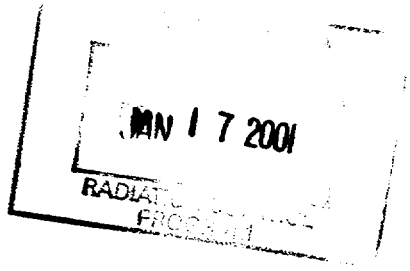
HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: www.deq.state.mi.us

**RUSSELL J. HARDING,** Director

REPLY TO:

DRINKING WATER & RADIOLOGICAL PROTECTION DIVISION
3423 N MARTIN L KING JR BLVD
PO BOX 30630
LANSING MI 48909-8130




January 10, 2001

Mr. Ron Fraass, Chair
E-6 Committee
Conference on Radiation Control
Program Directors
Kansas Department of Health and Environment
Bureau of Air and Radiation
Forbes Field, Building 283
Topeka, Kansas 66620

Dear Mr. Fraass:

On December 18, 2000, we received a copy of a document entitled "Rewrite of PAG Manual," prepared by SC&A, Inc., for the U.S. Environmental Protection Agency (EPA) and dated September 29, 2000. We understand that any comments we might have are to be directed to you as chair of the E-6 Committee of the Conference of Radiation Control Program Directors (CRCPD).

Based on a cursory review of this document, we applaud the EPA's effort to initiate a rewrite of their Protective Action Guides (PAG) Manual, which, we believe, is long overdue. However, it appears that considerable additional effort is needed to update and improve the usefulness of a revised PAG manual. The following comments are offered for consideration by the CRCDP E-6 Committee and the EPA:

1. We are unclear concerning EPA's process for revising the EPA's PAG Manual. We are currently unaware of the overall time frame for review and publication of revisions, and we are also concerned about how the input of interested stakeholders will be integrated into the process, especially the input of state and federal government agencies with responsibilities related to nuclear accident emergency response and public protective action decision making.

2. The September 29, 2000 draft rewrite document appears to contain several significant changes, many of which appear to be inconsistent or even in conflict internally within the document as well as externally with related recommendations of other authoritative bodies. For example, a new drinking water PAG is introduced which appears similar (but not identical) to EPA's existing National Primary Drinking Water Regulations for radionuclides. The associated dose (and health risk) level embraced by these regulations appears to be inconsistent with the basic meaning and intended application of an emergency PAG. In addition, the treatment of thyroid and skin PAGs are described as "supplementary" PAGs without clear explanation of this new concept. For the thyroid "supplementary" PAG, other authoritative bodies such as the U.S. Food and Drug Administration and the International Commission on Radiological Protection have published related PAG values in conflict with those in the EPA document.

3. The definition of "total effective dose equivalent" applicable to assessing dose in an emergency continues to be in conflict with that used by other state, federal, and international radiation protection agencies. The application of "committed effective dose equivalent" concept also appears to be inconsistent.

4. The definitions of "early, intermediate, and late phases" and "first and second time periods" appear to be archaic and impractical in light of U.S. nuclear reactor emergency preparedness program experience and international recommendations such as those of the ICRP (e.g., ICRP Publication 63) which describes the use of "pre-release, release, and post-release stages" in a more practical, consistent, and implementable manner for government preparedness programs.

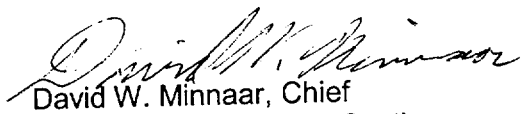
5. The continuing inclusion of a "four-day" duration for assessing radiation dose projections following a release is similarly archaic and impractical in light of the status of existing radiological emergency preparedness programs capabilities in the U.S. and in light of current technical information addressing the likely temporal behavior of airborne releases following a severe reactor accident, for which urgent protective action decisions are needed based on the most significant short-term exposure pathways.

6. We noted numerous errors and other occasions of confusing information that were introduced into the document. Due to the short time constraints to provide comment to you, we could not elaborate on them more comprehensively in this letter.

Due to the continuing keen interest in these issues from a radiological protection perspective, we request that this office be kept informed of significant developments concerning further revisions to the EPA PAG Manual and strongly urge the EPA to involve the Federal Radiological Preparedness Coordinating Committee, the CRCPD E-6 Committee, and others in the revision process for this important document.

Should you have any questions concerning this letter, please contact me.

Sincerely,



David W. Minnaar, Chief
Radiological Protection Section
Drinking Water and Radiological
Protection Division
517-335-8204

DWM:RT

cc: Mr. Charles Blue, U.S. EPA
Mr. Roland Lickus, U.S. NRC
Mr. Daniel Sibo, MSP/EMD

**Johnny James <johnny.james@ncmail.net>**

01/08/2001 14:25

To: REP PLANNERS <repplanners@lists.execpc.com>

cc:

Subject: NEW REVISION FOR EPA-400

I need the web site for the new revision for EPA-400 that just came out. Also, has anyone had the time to compare the revision with the 1992 version? There is a lot of extra material in the revision and also a conflict between EPA and the new FDA KI policy. Any comments?

Thanks

Johnny James
Division of Radiation Protection
State of North Carolina

Department of Environmental Protection
Radiation Protection Programs
Bureau of Nuclear Engineering
PO Box 415
Trenton, NJ 08625-0415
609-984-7700
Telefax: 609-984-7513

February 15, 2001

TO: Ron Frass, Chair
Nuclear Emergency Preparedness Committee, CRCPD

FROM: Nick DePierro, Supervisor
Nuclear Emergency Preparedness Section

SUBJECT: Draft EPA-400 Review

The following comments were prepared by myself, Patrick Mulligan and Daniel Cowperthwait, members of my staff and CRCPD. The comments provided in this document are not all inclusive. The errors found in the document were to numerous to itemize. We have made an attempt to capture the essence of the problems with the manual rewrite by highlighting the most obvious errors. There are two technical concerns we have with the document as well. The technical concerns are discussed first in the sections that follow.

In general terms, we have found the rewritten document to lack consistency in the usage of technical terms regarding nuclear power plant accidents as they relate to emergency preparedness and response. We also found that the attempt to simplify the language and explanation of terms has resulted in inaccuracies in content. The technical document EPA is issuing as guidance needs to be accurate and consistent with other regulatory guidance and policy. The EPA needs to review this document internally more seriously prior to issuing the document to the REP community. Some of the errors indicate that there was little or no internal review and revision prior to submitting the document to the CRCPD. The members of the CRCPD sub-committees should not be expected to be the editors for draft federal documents. This document needs considerable work to reach the same technical standard as the document they are replacing.

## PAGs for Water

The EPA suggests that the standard for water during the intermediate phase should be the current EPA standard of 4 mRem per year. However, the guidance only discusses the application of this standard to drinking water. This means that water to be analyzed for compliance with the standard is "finished" water ready for public consumption. The laboratory analysis required to verify these levels might be impractical for this type of emergency situation. The analysis required to test to these levels is time consuming, taking up to 24 hours to analyze one sample. Considering the number of samples that may need to be analyzed within a contaminated area, this effort may be too time consuming. The necessary resources to comply with this standard in a timely manner without causing unnecessary hardship on the population or

economy of a local community may not be attainable. The EPA should reconsider this recommendation keeping in mind the resources and time required to comply with this standard for drinking water. Interim standards should be developed or water included as part of the diet when considering the PAGs for food sources may be an alternative.

**Recovery/Return Standards**

The long term recovery and clean up operations for contaminated areas is another issue that needs further consideration. The EPA should be cautious on long term clean up issues and standards set. The EPA-400 manual recommends using the clean up goals they have established for contaminated sites (CERCLA). The cost of such an expansive clean up effort before returning property to unrestricted use will be very costly. This expense may or may not be covered by the liability insurance of the utility involved. This could put excessive economic burden on federal, state, county, and local governments.

The EPA needs to keep in mind that the restricted zones and the associated buffer zones are the areas where the intermediate response efforts will be concentrated. These efforts will be time consuming and costly. If buffer zones are established at 10% of the 1 year PAG for relocation, the areas excluded from the decontamination efforts of the intermediate phase could be up to 200 mRem in the first year. If emergency response organizations started to extend that area, as recovery and return efforts begin, to include contaminated areas above the standards set by CERCLA, this could significantly change the magnitude of the areas to be considered.

In addition, the extension of the areas considered for radioactive clean up and decontamination into areas not yet included in response efforts, will undoubtedly cause anxiety to the population that was residing in that area while response efforts were concentrated elsewhere. Imagine you have been living and working in a local community thinking you were safe from radiation exposure in the aftermath of a nuclear accident only to find six months later that the government wanted to help you clean up your yard. This will not go over well with the citizens of the community. If the EPA wants to make CERCLA the standard for recovery operations, they need to include all affected areas during the intermediate phase.

Any affected areas that will ultimately be included in any short term or long term decontamination and clean up operations will need to be identified during the intermediate phase. That way there are no surprises to deal with. It would be necessary to include additional zones beyond the buffer zones to include contaminated areas that are restricted but do not warrant an immediate clean up or decontamination. Dose reduction efforts for these areas should be instituted as clean up and decontamination of restricted zones and buffer zones commences.

If the EPA wants CERCLA to be the standard for clean up following a nuclear accident, then they need to bridge the gap between the 200 mRem buffer zone and the CERCLA standard. They cannot leave this potential nightmare in the laps of state and local governments. The guidance in Chapter 6 needs to be broadly expanded to include how and when this is to be completed and how response organizations will bridge the gap between the intermediate clean up levels and the CERCLA standard.

The following sections include editorial comments on the specific content of some of the chapters in the draft document. The inclusion of specific comments is intended to demonstrate

that this document is not nearly ready for review by the REP community. The EPA has a tremendous amount of editing and revisions to make before this document is ready for review.

## Chapter 1

The use of the boxed language is a useful tool to highlight important facts or key words and definitions contained in the text. However, in this chapter, as well as throughout the document, the text in the boxes does not match the language used in the document's text. The definitions given in the boxes are not consistent with those contained in the text. These need to be addressed to eliminate confusion and inconsistency.

In several places of Chapter 1, the document states that decision makers and assessment staff need to use professional judgment when applying the Protective Action Guidelines (PAGs). As an example, Line 6, Page 1-1 states "However, you must judge whether the quantity of radioactive materials released warrants your consideration of protective actions". Considering the technical nature of the EPA PAGs, especially the intermediate phase PAGs, the assessment team needs to use more technically astute methods to determine the quantity of radiation present than personal judgment. Assessing the quantity of radiation is scientific and cannot be judged.

On page 1-1, the document is described as a planning document for response to a nuclear emergency. This is somewhat misleading. The NRC has stipulated through statute and guidance what planning issues need to be addressed for fixed nuclear facilities. In particular, NUREG-0654 is the planning basis for nuclear emergency response plans. EPA-400 is a manual of protective actions and how to apply them following and emergency. This manual should avoid getting into planning issues.

Page 1-1, Line 26, states "This manual will help you think through.....". The manual is an inanimate object. It does not help someone think. It may evoke a thought process, but it definitely will not help someone think.

Page 1-2, Line 3: Organs do not absorb radiation, organs attenuate radiation.

Page 1-2: The definition box does not complete the sentence. In addition, the term "unplanned release of radioactive material" is not accurate. It may be planned in the case of a hardened torus vent release, or it may be an unplanned release that has no offsite impact requiring the use of the PAGs.

Page 1-2 Line 14: The difference between external and internal exposure pathways needs to be clarified. The internal exposure results from the uptake of radionuclides by organs and tissues within the body following inhalation, ingestion, or, absorption through the skin. Noble gasses are also taken in to the lungs during inhalation but do not react and, therefore, are considered only external sources of dose.

Page 1-2, "Are there limitations to what the protective action guides can do?" First, the protective action guides can't do anything, they are inanimate. Second, this guidance is supposedly for emergency response preparation and planning, it is not necessary to state that

they should not be applied under normal conditions. If conditions exist that meet the PAGs there better have been an emergency of some sort. This whole paragraph is completely unnecessary and adds no value to the document.

Page 1-2, Line 36: "During the planning process, you are immune from pressures of an actual incident and you will be able to think clearly about what you should do". Immune is an inappropriate word here. Second and more importantly, the document implies that assessment staff and decision makers cannot think clearly under pressure. We not only believe this statement is inaccurate, but may be insulting to planners and decision makers. People put in a position to make difficult decisions are chosen because of their ability to respond well under the pressures of emergency situations and make sound decisions based on the facts provided.

Page 1-3: The section attempting to define what an emergency planning zone is poorly written. Other documents accurately describe what the EPZ is and how it's boundaries are defined. There is no mention of the 10 mile EPZ that the NRC has defined in their planning document. There is no clear definition of the term EPZ in this document and the words used to describe the EPZ are misleading and confusing. We suggest the EPA leave this one out of this document or use the words that all REP planners are used to reading.

Page 1-3: The section discussing the relationship of the EPZ to the PAGs fails to correlate the potential for acute health effects (PAGs) into the relationship with the EPZ. The section goes on to talk about a planning zone for evacuation and sheltering. This discussion leads the reader to think that these planning zones are in addition to the emergency planing zone described earlier in the section. Again the wording is confusing and inaccurate.

Page 1-4, Line 4: This section alludes to some method for "planning how to protect food from contamination". We have heard of no protective measures to protect food from becoming contaminated. If there are new PAGs for this then the EPA needs to let the REP community know about them.

Page 1-4: The section, "What should I include in my emergency response plan" is irrelevant to the intent of this document. NUREG-0654 is the planning standard for developing a comprehensive plan for the response to a nuclear emergency. That document is quite specific and extensive in describing the components of a nuclear emergency response plan.

Page 1-4, Section 1.3: This section meant to define the phases of an emergency does not provide any defining characteristics for the phases identified.

Page 1-4, Line 29: This states "The early phase of a nuclear incident, which may also be called the emergency phase, is a period at the beginning of the event when the source is out of control." First, there is no definition of what is meant by the "source". Second, the "source" is not necessarily out of control during an emergency. In fact, in many emergencies, protective actions may be implemented with no release of radiation at all. This is a poor choice of words to explain the emergency phase of a nuclear accident. This paragraph also makes the statement that; "it is likely that at this time the situation at the facility will be getting worse." This is a presumptive statement that has no basis in fact.

Page 1-5, Line 3: "The intermediate phase of an incident is the period beginning after the source and environmental releases have been brought under control." During the intermediate phase, the environmental release of radiation better be terminated or else you will still be in the emergency phase.

Page 1-5, Line 29: This states that evacuation or sheltering will "prevent" people from inhaling radioactivity contained in the airborne plume. This might be true if the PAD includes holding your breath while evacuating or for the remainder of the release period if sheltering. We do not believe that evacuation prevents inhalation, and, sheltering certainly does not.

Page 1-7, Line 35: The acute health effects cited here, nausea, vomiting, and, hair loss, are manifested at exposures to radiation far beyond the limits EPA has set for evacuation. They may be a little extreme for this document. Perhaps they should stick with slight blood changes that may occur at doses that may be in the range of this type of accident. Nausea and vomiting are not acute effects that we would expect to see even in the worst of accidents at a US Nuclear Power Plant.

Page 1-8, Line 26: "The protective action guides contained in this manual are independent of the magnitude or type of release". We are not sure what they are getting at with this statement. It is unclear how the magnitude and type of release can be separated from the PAGs because the PAGs are based on both. The magnitude of the release will initially drive the emergency phase PAGs and the type of release will certainly impact the intermediate phase PAGs for food and water. Something is missing in this disclaimer. It would be better just to leave it out.

Page 1-8, Line 35: The first bullet "whether a major release has occurred" is hard to define. The magnitude of "major" is not defined in the document. Further, a release does not have to be major in order to apply the PAGs. The projection that offsite doses may exceed the PAGs is enough to warrant a protective action for the public. This may not be deemed a "major" release. Different wording should be used that more accurately states the intent of the bullet.

Page1-9: The first sentence on the page states that there will be little information available and decisions will have to be made very quickly. With the use of plant parameter monitoring computers, there are literally thousands of data points available for assessment on a real time basis during an accident. We believe the opposite of the statement in the document may be true. There may be an overwhelming amount of information available and not enough time to analyze it all prior to making a decision. In most cases, for reactor type accidents, there will be ample time to assess the necessary data to make decisions for the protection of the public.

**Chapter 2**

The opening paragraph of this section states that the chapter "will help you to understand how to implement the PAGs. We don't believe that "implement" is the correct word. Implementation of the PAGs involves coordinating the resources necessary to notify the public of protective actions and move them if necessary. Access control, traffic control, reception

center and congregate care center activation are all implementation activities. These issues regarding implementation are not the focus of this chapter.

Page 2-1: This section again refers to some source being "out of control." It is not necessary for some source to be "out of control" to take protective measures for the public. Projected dose based upon plant conditions may be all that is necessary to make protective actions with no subsequent release of radiation.

Page 2-3: Table 2-2 lists the PAGs used for the emergency phase of an accident. The table in this section shows the PAGs for evacuation as a range of projected doses from 1 Rem to 5 Rem. In the comment section of the table, the document states that evacuation should be initiated at 1 Rem. Why then do they list a range up to 5 Rem? The PAG should be 1 Rem and nothing more. Suggesting that the projected dose before taking action might be 5 Rem goes against all the other previous guidance for emergency planning.

Page 2-4: The final two paragraphs on this page seem to contradict one another. The paragraph starting on line 24 states that the risk of an evacuation may too high for some populations and it may be prudent to postpone evacuation. The next paragraph emphatically states that the PAGs apply to all members of the exposed population. These contradictions should be resolved. It appears like they are trying to give decision makers some room to make "professional judgments" but take those exceptions away by making the absolute application of the PAGs to all members of the population.

Page2-5: The section "Do I always use the early phase PAGs?" states at one point that some incidents involve small radioactive releases over a long period of time and these situations are less urgent. The recommendation is that relocation may be a possible alternative in this situation. They go on to say that relocation is not included as an early phase PAG. The distinction of the difference between relocation and evacuation here is too difficult to try and explain by using the PAGs. What is a small release of radiation? Is this level close to the PAG? Is the implication that the PAGs may be reached over a period of days? The discussion and the intent of the section are not clear.

Page 2-5, Line 37: "Depending on the radioactive components of the release, you may consider taking actions to protect people from radiation exposure resulting from radioactive materials deposited on their skin and clothing". We have never heard of any such protective actions being taken. Where are these actions outlined and what is the basis for the actions. Are people to wear special clothing for this? Are we to distribute gloves, booties, and tyvek suits to the general public for evacuation?

Page 2-6: The whole discussion trying to further divide the early phase into two time periods is a wasted effort. The distinction made in this section really adds nothing to the response efforts or the application of the PAGs and needs to be removed.

Page 2-6, Line 14: "The most critical aspect of responding during the first period is speed." Although time is of the essence we feel that safety, for both the emergency workers and

the public, is more critical and that ensuring the safety at the cost of some time is of more value. Speed is not the most critical, it is important to mobilize quickly, but also safely.

Page 2-6, Line 16: This section states that "environmental measurements made during this period may not be very useful to you". We strongly disagree with this statement. Evacuations and other protective actions are initially based upon projections of which areas will be affected by the radioactive plume. Direct field measurements are vital to the verification that the protective actions taken are sufficient to protect the entire population. In addition, acquiring air samples early can assist in making decisions to authorize the use of potassium iodide. Direct measurements in the field can assist decision makers in upgrading protective measures as necessary. Radioactive plumes will not behave as they do in models and it is not prudent to put to much confidence in the model's prediction of affected areas.

Page 2-6, Line 20: The bold statement here states "Consequently, we recommend that you initiate early protective actions in a predetermined manner based on facility conditions". This contradicts what was stated on page 2-4. That section stated that decision makers needed to use their professional judgment in making decisions using whatever information was available specific to the accident. This section sounds a lot like the NRC Supplement 3 document on severe core damage. Predetermined (knee jerk) reactions to incidents does not allow the flexibility required to make sound decisions for all accident sequences. Assessment should be made on a case by case basis and appropriate actions taken accordingly.

Page 2-6: The sections "What is the sequence of actions I should take in the event of an emergency?" and "Who notifies who and what information should be provided?" should be omitted from this document. This guidance is beyond the scope and authority of the EPA. The NRC not only has guidance on these issues but statutes as well. It is very clear that the authority for this information is the NRC and the documentation is well understood by all REP Planners.

Page 2-8, Line 23: This section again refers to a range of PAGs from 1 to 5 Rem with a strong suggestion to take actions at 1 Rem. Where did the range come from and why is the EPA not making a stronger commitment to the 1 Rem PAG as the only level for taking action?

Page 2-10, Line 14: This section defines sheltering as the use of some nearby structure for protection. This is not what is meant by "sheltering" according to planners in the REP community. Any reference to using available structures for protecting the population should be removed from his manual because it may create confusion for planners. We do not want to start sending people to bomb shelters during an accident at a fixed nuclear facility.

Page 2-12, Line 25: This section states "The use of stable iodine to protect against the uptake of inhaled radioiodine by the thyroid is recognized as an effective alternative to evacuation in the event that evacuation cannot be implemented or exposure occurs during evacuation". This is a bad message to send in this manual. The use of potassium iodide is nothing more than a supplemental protective action to evacuation. The NRC rule change states that it is a supplement to evacuation and not an alternative

Page 2-17: The boxed text states that an atmospheric diffusion and transport model is the "most accurate" method of projecting offsite radiation doses resulting from a nuclear accident. The word "accurate" should never be associated with any modeling software. There are severe limitations with all dispersion models and the assumptions and inputs need to be clearly understood before making decisions based on the results. A model is a tool used to assist in making decisions. To imply any degree of accuracy is found in modeling is misleading and could lead people to actually trust the results and make poor decisions.

**Chapter's 3 through 6**

These chapters are written as poorly as the other chapters. Terms are use inappropriately and the language is misleading and confusing. The priorities for relocation contradict each other in many cases. There is no clear explanation on how to apply the intermediate PAGs for food and water

"Woods, Steve (DHS-DDWEM)" <SWoods1@dhs.ca.gov>

To: 'Ronald Fraass' <Rfraass@kdhe.state.ks.us>
cc:
Subject: FW: Draft EPA 400 Comments

04/11/2001 17:42

Ron,
Here are a couple of additional comments on the draft EPA 400 that one of my staff just sent me.

> -----Original Message-----
> From: Fill, John (DHS-DDWEM)
> Sent: Wednesday, April 11, 2001 2:26 PM
> To: Woods, Steve (DHS-DDWEM); Jackson, Kurt (DHS-DDWEM); Lauricella,
> Leona (DHS-DDWEM)
> Subject: RE: Draft EPA 400 Comments
>
> I have a few comments:
>
> Page Line Comment
>
> 2-3 18 Should be CDE not TEDE. Change to "state or local."
>
> 2-14 13 Change to "declared pregnant women" and comment on delaring
> pregnancy.
>
> 3-55 Table 3-9 Values in table do not match FEMA guidance. Setting
> 2x bkgd as the screening level would be unworkable at reception centers.
> Note "a" allows for a higher level - not to exceed the reading
> corresponding to 0.1 mR/h. For the CDV-700, this would be 60 cpm, still
> way too low. How does EPA justify setting such a low screening level.
>
> 4-1 general Chapter should make clear that these decisions are less
> important (or at least less time critical) than decisions on relocation,
> shelter, KI, etc. Perhaps the question "When should I worry about this?"
> could be added near the beginning of the chapter.
>
> 4-1 general A caution should be added to not tell people not to shower
> if they are potentially contaminated and to not tell people not to drink
> if no other water source is readily available.
>
>
> -----Original Message-----
> From: Woods, Steve (DHS-DDWEM)
> Sent: Wednesday, April 11, 2001 1:41 PM
> To: Fill, John; Jackson, Kurt; Lauricella, Leona
> Subject: Draft EPA 400 Comments
>
> Did anyone get a chance to review EPA 400 and if so do you have any
> comments. If you do, please send them to me ASAP. Thanks!
>
> Stephen A. Woods
> Senior Health Physicist

E 7/1