

DANGEROUS GOODS PANEL (DGP)

NINETEENTH MEETING

Montreal, 27 October to 7 November 2003

**PROPOSED THRESHOLD VALUES BY THE IAEA
FOR INCLUSION IN THE SECURITY PROVISIONS**

(Presented by the Secretary)

Attached is an extract from the recent IAEA meeting on security.

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Threshold Values:

In the afternoon session, the question of the delimiting activity between general and enhanced security was discussed in great detail.

A table was developed to display the relationship among INFCIRC/225, TecDoc 1355, the Draft Transport Security TECDOC, and Orange Book limiting values. A consideration of the relationship between A's and D's suggested a factor of twenty between the two parameters (if the pocket dose is discounted). When applied to the TECDOC-1355 levels of A/D of 1000 (Security Group A) this translates to a value of about 20,000 A₁ or A₂ and Security Group B translates to about 0.2A₂.

A resulting suggestion was that the Draft Transport Security TECDOC value could be much larger than 3000 A₂. Discussion of the level also questioned the need for limits on both A₁ and A₂. It was stated that limiting A₂ ought to be sufficient to limit consequences.

A second suggestion was use of the nuclide list and levels provided and accepted in the Code of Conduct. However, it was pointed out that singling out specific nuclides was not in the spirit of the manner in which transport risk/consequence was controlled using A-values

There was broad support for using the A system values. The reason was that these values are well known and well understood in the transport community and since the A's and D's are broadly related there is really no need to go to another system.

Discussion was considerable with respect to the threshold level with most of the opinions supporting the 3000A₂ value, although there was some argument for higher and lower values.

The chair pointed out that 100 A₁ of a gamma emitter like Co-60 could produce a lethal dose quickly and is an activity amount that is much smaller than 3000 A₂. The chair again posed the question of what limit for enhanced security is to be recommended. There was consideration of levels as low as 100 A₂ in order to be sure that neither direct exposure nor inhalation would be a major problem. However, the potential effects of a limit as low as 100A₂ per consignment or conveyance were seen to be severe on the radiopharmaceutical industry in which consignments of 300 or 400 A₂'s were possible. Given the assumed limited attractiveness to a terrorist of that material there was great reluctance to lowering the levels to that level.

The chair divided the question into two parts: should the WG consider a list of specific nuclides or an inclusive list. The consensus was for an inclusive list based generally on A-values. Recognizing that using only the A₂ values would allow very high dose rate quantities of for gamma emitters and that using only the A₁ values would allow very high activities of alpha emitters, the WG concluded that a combination of A₁ and A₂ multiples was needed.

Since a determined terrorist can disperse even a special form material, it was decided to apply a radioactivity threshold limit for all radioactive materials whether it is in special form or not. Consequently the WG needed to determine suitable multiples for A_1 and A_2 with the lower value being limiting for a given radionuclide.

The chair then moved to the question of what the threshold levels should be. The question was again divided into using just an A_2 value or both A_1 and A_2 values. A number of potential options were discussed at some length with a consensus that developed around the need of simplicity. The chair suggested that a small working group evaluate the various limit choices to determine which would most effectively meet the two goals of producing a simple limit that is, at the same time, protective of public health and safety in the event of terrorist activity.

The WG started by looking at the spreadsheets developed by the small group in analyzing effects of various threshold values of A_1 and A_2 . The chair's view was that there are few clear choices for delineating a threshold between the security levels.

In an attempt to be sensitive to the Code of Conduct source category, there was a suggestion that the all sources of the same (high) category(s) be automatically in the highest security group. For normal form material there would be the A_1 and A_2 multiples limit. It was argued that this was contrary to the concept of simplicity in setting limits, which was stated as a goal in earlier deliberations that prompted some additional discussion.

Before a decision could be made on the threshold question, a determination had to be made on what the activity level would apply to. Options considered included applying the threshold to a conveyance, consignment or package. In light of the operational problems inherent with applying the value to a consignment or conveyance, it was decided to apply the threshold to the activity contained in a package.

After some consideration of the relationship of various thresholds and the source categories it was found that there appeared to be reasonable consistency with a two component threshold activity, containing a relatively low multiple of A_1 and a larger A_2 multiple (e.g., 50 A_1 and 1000 A_2). A small group was authorized to look at several different sets of multiples to determine if there is one that would include all sources in Category 1. The result of that small group's efforts suggest that values of no more than 50 A_1 coupled with an A_2 -multiple as large as 10,000 could be workable. Such values capture all Category 1 sources in the high security level as well as many sources in Category 2. In addition, 50 A_1 will capture some radiopharmaceutical feed material shipments as well as a number of relatively small Category 2 sources.

To move toward resolution of the limit issue, the asked whether a nuclide specific and

quantity specific list be incorporated into the draft TECDOC. In this regard, the nuclide and quantity list from the Code of Conduct was proposed. Although the proposal received some support However, there was no consensus that the WG should abandon the concept of describing the limiting activity in terms of a multiple of A_1 and A_2 values as developed previously. The chair indicated that without a more definitive suggestion the current values in the draft would hold. As a result the discussion moved into the discussion and decision on specific multipliers for A_1 and A_2 values. Discussion ensued relating to concerns relating to having requirements much above that for other dangerous goods that are to be subjected to "enhanced security". There was support for 100 A_1 and 3000 A_2 as the limits for the enhanced security. The rationale is that those values achieve the goal of protection, and while it doesn't include all Category 1 sources, this was seen as not important because a major aspect of the basis for designating the Category 1 sources (pocket dose) was seen as irrelevant in the transport mode. Subsequently, it was suggested that 500 A_1 should be the limit (under the assumption that that the pocket dose impact on D values relative to A_1 is of the order of 100. However, there was significant support of the 50 A_1 level because it will include ~~most~~ of the Category 1 Code of Conduct sources in the higher level. 200

The chair determined that the lesser of 50 A_1 and 3000 A_2 for the activity limit for enhanced security treatment represents the consensus of the group, but noted the concern that the requirements to be applied would not differ appreciably from that required in Orange Book for all other High Consequence Dangerous Goods. This is a result of concerns about the relatively low threshold that has the potential to pull many shipments into the enhanced security level.

The WG agreed that the limiting value(s) be communicated to the UN Committee of Experts as quickly as possible in order to assure that the lower values likely to be recommended by this meeting be considered at the earliest possible stage in the development of new Orange Book text. Two communications are envisaged:

1. Notification to the UN Experts that the threshold values have been changed as part of this session; and
2. When it becomes certain what the value is (as a result of comments from Member States on the revised TECDOC) that the value be communicated with a request for change

In light of the decision taken regarding the activity limits for enhanced security, the chair enquired if there was a need to reconsider exceptions. With regard to UF_6 there was discussion of the wording of the exception in para 201. It was decided that the reference to UF_6 be removed and that the paragraph be reworded to call attention to the need to consider subsidiary risk and a qualifier for enhanced security.