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American Mining Congress
Uranium Environmental Subcommittee

Supplemental Comments on

Draft Regulatory Guide
Health Physics Survey in Uranium Mills
(Task OH 710-4)

Supplemental Comment 1

The definition of "airborne radioactivity area" as specified in 10 CFR 20.203(d)(1)(i) includes any room enclosure, or operating area where airborne radioactive material exists in concentrations in excess of (MPC) air. Since most sections of uranium milling operations are not self-enclosed, it is possible to observe airborne radioactive areas as defined in 10 CFR 20.203(d) which are not routinely occupied by workers. Therefore, only in operated-occupied areas should sampling frequency be increased to weekly, if an airborne radioactivity area indeed exists.

Supplemental Comment 2

In worker-occupied areas, which have not been designated as "airborne radioactivity areas," the Draft Regulatory Guide proposed monthly grab samples of 60 minutes duration, (page 4). However, based on this requirement, if an average of 20 to 25 operator-occupied sites are monitored, an average of 3 to 4 days would be required to collect the samples for airborne uranium only. Since the Draft Regulatory Guide calls for the establishment of administrative action levels for exposures to airborne radioactivity in accordance with the ALARA philosophy, it is respectively submitted a 30-minute grab sample in areas not designated as airborne radioactivity areas be allowed with a corresponding stipulation requiring additional sampling in the area during the month if the action level has been exceeded.

Weekly high volume samples collected over 5-minute periods are not deemed preferable in this context. Fifteen-minute high volume samples with a flow rate of 30 cfm would be considered adequate and would satisfy the LLD values recommended in the Draft Regulatory Guide.

To avoid confusion among administrative personnel, it is recommended that units of airborne radioactive materials in air be expressed in terms of microcuries per milliliter as in accordance with the units specified in 10 CFR 20, Appendix B.

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Supplemental Comment 3

The Draft Regulatory Guide in Section 1.4 (Surveys for External Radiation and Action Levels for External Radiation) states:

> To determine the need for personnel monitoring, quarterly radiation exposures expected for each category of plant worker can be calculated from the measured radiation levels and predicted occupancy times. If the calculated quarterly radiation gamma ray exposure for any individual worker exceeds 0.31 rem, Section 20.202 of 10 CFR 20 requires that the worker wear a personnel radiation dosimeter (e.g. film badge or TLD). In addition, personnel monitoring should be used for at least a one-year period to verify the survey results even if predicted recent levels are below 0.31 rem. If external radiation doses to any worker exceeds 0.31 rem per quarter, an investigation of causes should be made and corrective actions taken if appropriate.

It is agreed personnel monitoring should be used for at least a one-year period. However, we recommend that gamma radiation surveys be performed quarterly throughout the mill at operator-occupied locations to cross-check or correlate external gamma survey data with film badge readings. Once a baseline has been established, any increase in exposure values should be closely monitored and correspondingly evaluated. We do not agree that if external radiation doses to any worker exceed 0.31 rem per quarter, an investigation of the causes should be made. Because certain values exceeding 0.31 rem may be anticipated, it appears in this case the application of the ALARA concept is being applied on the basis of a minimum level of 0.31 rem per quarter rather than on reducing exposure values in all areas.

In addition, we would like NRC to note that, historically, mills do not see exposure rate values which would exceed 2.5 mR/hr based on a five-day, 40-hour occupancy. Therefore, very few mills would have "radiation areas."

Supplemental Comment 4

With respect to Section 2 (Intake and Exposure Calculations), any formula for determining quantity intake should include all possible terms that may apply in the formula. Therefore, the formula is (1) and (2) for uranium ore dust/yellowcake intake and randon daughter intake, respectively, the formula should include a term for the prescribed protection factor in a respiratory protection program is being conducted in conformance with Reg. Guide 8.15.

Supplemental Comment 5

Regarding Section 3 (Report of Exposures to Airborne Materials), in all subitems, not only examples of calculations but also general formulas shou'i be provided to aid in calculations.

Supplemental Comment 6

In Subitem 3 (Radon Daughters), four working level months (4WLM) is not expressed in terms of the appropriate units defined by 10 CFR 20. We therefore suggested the units be changed to correspond to MPC-hours.

Supplemental Comment 7

We amend our previous comment 4 as follows. With respect to the requirement of Section 1.8 that packages having contamination should be cleaned until they comply with Department of Transportation regulations for non-exclusive use vehicles, we stated that this requirements did not apply to exclusive use vehicles. That statement is not fully correct. Under 49 CFR 173.392, packages of low specific activity radioactive material assigned for sole use consignment must not have removable surface contamination in excess of the values specified in 49 CFR 173.397.

Supplemental Comment 8

We also amend our previous comment 8 as follows. Item 4 on Page 15 of the Draft Regulatory Guide assumes ultimate solubility of uranium in the forms of both yellowcake and ore dust. As much, chemical toxicity to the kidneys by uranium would act as a heavy metal effect regarding chemical toxicity of the kidney, uranium that has been taken up by the body and reports to the kidney will effect that organ in a like manner.

KERR-McGEE CORPORATION
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October 8, 1980

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Sir:

The American Mining Congress, Uranium Environmental Subcommittee presents the following comments on the draft Reg. Guide titled, "Health Physics Surveys in Uranium Mills", Task OH 710-4.

Comment No. 1

On page 4 it states, "An acceptable sampling program for airborne uranium ore dust includes monthly grab samples of 60 minutes duration in worker occupied areas in which ore is actively handled". This applies to areas which do not need to be designated as airborne radioactivity areas. We believe weekly high volume samples collected for five minute periods are preferable.

Comment NO. 2

On page 9 it states, "In addition to gamma surveys, beta surveys should be made every two years to estimate extremity and skin exposure for workers who work for long periods in close proximity to yellowcake". We believe a single study in this regard, that is beta exposure to the skin of the worker, could be a single occurrence and need not be repeated annually.

Comment No. 3

On page 11, it is stated, "The area should be promptly cleaned if surface contamination levels exceeds 25% of the values in Table 1". We believe Table 1 should indicate the limits intended, not a percentage of another table. Table 1 then should be used exclusively for the Article 1.7 as found on page 12, which states, "Surface contamination levels listed in Table 1 are acceptable to the licensing staff for surveys of equipment prior to release to unrestricted areas".

Comment No. 4

On page 13, Section 1.8, "Survey of Packages Prepared for Shipment", it is stated that, "Packages having contamination should be cleaned until the packages meet Department of Transportation requirements for non-exclusive use vehicles". When exclusive use vehicles or sole use vehicles are used, this requirement does not apply. We suggest that prior to shipment, yellowcake drums be cleaned of any visible quantities of yellowcake when sole use vehicles are used.

Comment No. 5

On page 13, Item 2, Intake and Exposure Calculations, a formula is given for determining quantity intake of uranium in either micrograms or microcuries. We would prefer the familiar use of the MPC-hour to designate exposure to airborne radioactivity particulates.

Comment No. 6

On page 14 is a discussion of time studies made of workers activities delimiting a minimum study frequency of three months. We believe that time studies on an annual basis are adequate for the routine situation. Whenever process changes or procedure changes are implemented, additional time studies should be made.

Comment No. 7

In Section 3, Reports of Overexposure to Airborne Materials, on page 16, is a discussion of uranium ore dust and yellowcake in which the maximum permitted intake are given in terms of micrograms or microcuries. We would prefer to see this in terms of MPC-hours.

Comment No. 8

In regard to the combining of exposures as found in Item 4 on page 15, we really have no problem with the combining of exposure of yellowcake and ore dust assuming these both affect the kidney in a like manner. We do, however, have a problem with combining radon daughter exposure to the lung with the exposures to the kidney from ore dust and yellowcake as found in Subsection 5 of Part 3 on pages 15 and 16. The rem (or uranium chemical toxicity) to the kidney is not additive to the rem (or working levels) to the lung from radon daughters.

Comment No. 9

On page 16, Article 4.1, we again find exposures given in terms of micrograms instead of MPC-hours.

Comment No. 10

As found in Section 4.2 (also on page 16), is a paragraph titled, "Administrative Action Levels". This section refers to the "as low as reasonably achievable criteria for action levels". Another Reg. Guide, No. OH 941-4 in the draft stage implies action levels at the equivalent of 10% of MPC. Historically, the action levels of the industry have been generally set at values of 50-75% of MPC. The achievement of 10% MPC in an operation for one mill may be quite reasonable, while in another mill, it may be very difficult and even unreasonable to achieve. ALARA is thusly site specific to the various mills and to their process. Assigning a value to ALARA is the responsibility of each licensee, individually, and need not be quantified in a regulatory rule or guide.

Comment No. 11

Section 8 discusses workers' clothing. The first sentence states, "Workers working in airborne radioactivity areas should be provided with protective clothing---". The rest of the section deals exclusively with yellowcake handling areas and we feel that the first sentence should more clearly state the same. Further, additional clarificiation is suggested for the first sentence, as follows: "Workers working with yellowcake in airborne radioactivity areas, as defined in 20.203(d), should be provided with protective clothing such as coveralls and shoes or shoe covers.

Very truly yours,

W. J. Shelley

W. J. Shelley, Vice President
Nuclear Licensing & Regulation

WJS/hmw