

ARGONNE NATIONAL LABORATORY

9700 SOUTH CASS AVENUE, ARGONNE, ILLINOIS 60439

TELEPHONE 312/972- 3120

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PROPOSED RULE

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Reg. Guide*

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

Attention: Docketing and Service Branch

Dear Mr. Secretary:

Enclosed are comments on Regulatory Guide 3.8, Preparation of Environmental Reports for Uranium Mills. These comments were prepared by members of the staff of the ANL Division of Environmental Impact Studies.

Generally, the staff thought the guide in need of extensive editing. However, there were several omissions or lack of proper emphases in some of the problem areas which the staff has encountered in previous mill assessments. Namely, these omissions and lack of data requirements include:

- (a) The archaeological and cultural resources survey are unsatisfactory to the staff, nor will they meet the legal requirements;
- (b) In this same vein, sacred and ceremonial areas on the resource rich Indian lands are not considered;
- (c) Data for other mill-related facilities -- such as heap leach sites and ion-exchange plants -- are not requested;
- (d) The applicant is not made cognizant of the fact that they must comply with state laws, especially those which are eligible for federal funds (e.g., state endangered species); and
- (e) The alternatives section (Chapter 10) is weak and needs expanding. For example, data requirements for alternate sites should be increased. In addition, the lack of specific requirements regarding tailings disposal, stabilization and reclamation alternatives was viewed to be the most serious overall problem with the guide.

Specific comments are attached.

Sincerely,

P. F. Gustafson

P. F. Gustafson, Director

Division of Environmental Impact Studies

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Comments on Reg. Guide 3.8 Revision 1, Sept. 1978

| Section | Page(s) | Paragraph (from top of page) | Line(s) | Comments |
|--------------|---------|------------------------------------|---------|---|
| Introduction | vi | 1 | last | <u>ADD</u> the underlined: "... to their <u>accuracy and completeness</u> ." |
| | viii | (a) 1 | last | <u>ADD</u> : Where appropriate, similar information may be requested for support or ancillary facilities (e.g. heap leach and ion-exchange facilities) which are not within the mill site boundary. |
| | | (b) 3 | | The clarity of this paragraph could be improved with editing. For example, sentences 3 & 4 both start with the "If any..." phrase. A suggested rewrite for sentence 3 is: "The applicant should identify those areas where the information requested is not relevant to the particular mill under consideration." |
| | ix | 4 | last | <u>ADD</u> the underlined: "... mining <u>or other ore processing activities</u> ." |
| 2 | 2-1 | 1 | 3 | <u>REPLACE</u> : "area environment" with "project area" or more definitive terminology. |
| 2.1 | | 1 | 2-4 | Recently, the staff has encountered some confusion on the part of the Applicant as to the difference between the plant perimeter, exclusion area boundary, property line and fenced areas. We suggest that an additional sentence or glossary be added to this section to offer more guidance. |
| | | | 8 | <u>ADD</u> the underlined: "occupied <u>by or which will be modified for</u> the mine and mill." |
| | | | 14 | "... in the vicinity of a flood plain." should be quantified. |
| 2.2 | 2-2 | 1 | 5 | <u>REPLACE</u> : "... abnormal ..." with "... major..." or similar terminology. |
| | 2-2 | 2 | a,c,d&e | The <u>nearest</u> cattle, residence and vegetable garden will not necessarily receive the highest dose. Therefore, the Applicant should be required to supply <u>all</u> of these items within a specified (perhaps < 8km) distance. |
| | | | a | The types and numbers of "meat animals" should be specified. |
| | | | e | The size specified appears to be rather large and may eliminate those individuals who devote a major portion of their land to grazing or mill workers living on company property, but outside of the mill site boundary. |
| | | 4 | last | <u>REPLACE</u> : "... (gives dates)..." with "... (months of year)..." |
| | 2-3 | 1 | 2 | <u>ADD</u> the underlined: "... such as <u>federal (USDA)</u> , local and ..." |
| | | | 3 | <u>DELETE</u> : "... agricultural agents, ..." |
| | | 2 | 3 | In order to be consistent with other portions of this guide, the "... 16 km (10 mi) ..." distance should be 8 km (5 miles). |
| | | | 4 | The request for data on "projected population" should be coupled with a time frame, such as the active life of the mill. |
| | | 3 | f | <u>ADD</u> the underlined: "... drawdown <u>rates</u> ... use of <u>each aquifer</u> " |
| 2.3 | 2-4 | General | | There are no socioeconomic considerations reflected in the data requirements. All of the land use and demographic considerations relate to estimates of man-remS to population. A number of factors relate to current concerns about the cumulative effects of uranium mills, etc. in western states. The guide requires a discussion of impacts but not adequate data upon which an independent assessment can be made. These include: |
| | | | a) | number and location of residence of mine and mill workers. |
| | | | b) | other major energy projects in the area. |
| | | | c) | forecasts of population in nearby communities where workers will live. |
| | | | d) | adequacy of social and physical services impacted by cumulative energy development projects. |

| Section | Page(s) | Paragraph (from top of page) | Line(s) | Comments |
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| | | | | <p>e) social considerations with respect to mills located on Indian lands: 1) residence of non-Indian workers, 2) other considerations regarding development on Indian lands.</p> <p>f) all of the above considerations relate to communities impacted by uranium activities and may not be within the fifty-mile radius around the mill site.</p> |
| | 2-4&2-5 | 2 | | <p>This paragraph is unclear and misleading; i.e. it is doubtful that visitor statistics for the schools and hospitals would be useful. Please reword to read: "... tables giving the populations of neighboring schools, plants, hospitals and residential areas, and visitors statistics for sports facilities, parks, etc. within 8 km (5 mi) of the project site(s).</p> |
| 2.4 | 2-5 | General | 1-3 | <p>The archaeological, cultural, and historic aspects are not covered adequately. The applicant should conduct an archaeological survey. The survey method should be coordinated with the Inter-agency Task Force on Cultural Resources of the Department of Interior. The guide should clearly state that the archaeological survey method will be evaluated by qualified regulatory staff.</p> <p>With respect to Indian lands, these survey should be undertaken with special attention to sacred areas and other special features gleaned from oral history of the appropriate Indian tribe(s).</p> |
| | 2-6 | 1 | 1-3 | <p>Change to read: "... The environmental report should contain evidence of <u>this contact</u>, including ..."</p> |
| 2.7 | 2-7 | 3 | 1 | <p>Change to read: "The effects of mine, mill <u>and other project facilities</u> construction and operation ..."</p> |
| 2.7.1 | 2-8 | 2 | | <p><u>ADD</u>: Hydraulic conductivity</p> |
| 2.7.2 | 2-8 | 4 | 2 | <p>A specific radius or distance should be supplied for the "... environs of the site."</p> |
| 2.7.2 | 2-8 | 5 | | <p><u>ADD</u>: Surface water descriptions for receiving streams may include the channel shape, slope, roughness coefficient, sediment concentrations (suspended), flow records (at nearest gauges), and dispersion coefficients; for ponds and lakes the geometry of the bed, wind currents, and suspended solids (sediment) concentration should be provided.</p> |
| 2.8 | 2-9 | 2 | 2 | <p><u>REPLACE</u>: "... and ..." with "... or ..." to be consistent with the first line of the same page.</p> |
| 2.9 | 2-10 | General | | <p>Information regarding soils of the project area(s) should be included in this section or as a separate subsection. The minimum amount of required data should contain soil map(s), details of the physical and chemical characteristics of typical soil profiles with respect to potentially toxic elements or compounds, and Land Capability Classification. The site(s) soils should be evaluated with respect to suitability as sources of topsoil materials during the periods of interim stabilization and final reclamation.</p> |
| | | 3 | 1 | <p><u>ADD</u> the underlined: "... flora and fauna (<u>biota</u>) ..."</p> |
| | 2-10,2-11 | 3,1 | 3,1 | <p>The terminology "This (the) initial inventory" is misleading in that it implies a second or more thorough inventory. Further, the statements in question do not provide guidance. We suggest a more positive approach as follows:</p> <p>Field investigations, supplemented by literature searches, should be conducted to provide site specific information concerning flora and fauna in the vicinity of the project site. Investigative efforts should be sufficient to ensure that all "important" species will be identified.</p> |
| 2.9 | 2-11 | 2 | 4-6 | <p>In addition to mapping, principal plant communities should also be characterized by predominant species, successional stage, percent ground cover, and annual yield (in animal unit months or other acceptable units).</p> |

| Section | Page(s) | Paragraph (from top of page) | Line(s) | Comments |
|---------|--------------|------------------------------------|---------|--|
| 3 | 3-1 | 1 | last | REPLACE: "... <u>defensible</u> conclusions." with less antagonistic terminology. |
| 3.5 | 3-3 | General | | There is little or no mention of tailings management until Sections 9&10. In light of this problem's priority in the generic statement, as well as the difficulties encountered in the individual mill assessments, it appears that this document would benefit from an early section or paragraph which states the data required for the applicant's preferred operational (interim) stabilization and final reclamation of the tailings materials. |
| 3.5 | 3-3 | General | | The applicant should be referred to other applicable guides on tailings retention systems and mill wastes; e.g. Reg. Guides 3.11 and 3.23. |
| 3.7 | 3-4 & 3-5 | 4 | b,d & e | Data on the fate (or disposition) of mine effluents should be included. |
| 3.8 | New | | | A subsection should be added which describes other project-related facilities/operations. They may include those within or outside of the mill site boundary; e.g. sulfuric acid plants, other minerals extractions (such as molybdenum), borrow and fill areas, etc. |
| 4 | 4-1 | | | The clarity of this section could be improved with editing. Also, more specific terminology should be incorporated into the text. |
| 4 | 4-2 | 2 | 6 | REPLACE: "... how much land will be torn up, for how long, ..." with "... what is the total number of acres to be disturbed, at which locations, over what time period, ..." |
| 4.2 | 4-3 | 2 | 2 | The phrase "(loss of land, ..." is inaccurate in as much as the surface area is the same. The change is in the land use options available for that particular area. |
| 5 | 5-1 | 1 | 2 | ADD to the end of the sentence: "during the operating, and possibly the decommissioning, phase of the project." |
| | | 3 | 9 | DELETE "..., land ..." from the listing because these impacts are included in the remaining items. |
| | | 4 | 3&4 | For consistency "short term" and "long term" should be hyphenated. |
| 5.1 | 5-2 | 2&3 | 3&4 | The definition of "... (important) local flora and local and migratory fauna defined as 'important'..." should be specified in section 2.9. Therefore, a clearer and more concise phrase can be used in the remaining sections of the guide. This would also delete some of the redundancy in these and other (e.g. para. 2, page 5-3) portions of this document. |
| 5.1.2 | 5-2 & 5-3 | | | Please re-edit. |
| 5.2 | 5-3 | General | | Occupational dose data should be requested. |
| 5.2.2 | 5-4 | General | | Specific mention should be made to seepage and related impacts. |
| 5.2.3 | 5-4 | 4 | 7&8 | The "nearest residence" may not necessarily receive the highest dose. The applicant should be required to furnish data on the individuals at the nearest residence which is expected to have the highest dose commitments. |
| | | | last | For above-ground disposal, the tailings pond should be added as a point of airborne effluent release. |
| 5.2.5 | 5-5 | 5 | 5&6 | The meaning of "...from all receiving-water-related pathways..." is unclear in this and the preceding section 5.2.2. |
| 5.3 | 5-5 | General | | This discussion appears limited to offsite dispersion of nonradioactive wastes via water transport. The potential for windborne contaminants to affect offsite biotic systems should also be addressed. |
| 5.3 | 5-6 | 1 | 5 | "various distances" should be quantified. |

| Section | Page(s) | Paragraph (from top of page) | Line(s) | Comments |
|---------|---------|------------------------------------|---------|---|
| 5.6 | 5-7 | General | | The areas encompassed in "the immediate region", "neighboring region", and "the total amount of such land in the environs" is unclear. |
| 6 | 6-1 | General | | The monitoring efforts should be designed to detect both direct and indirect (or secondary) effects that would affect the environment. Also, the applicant should be advised that when possible and warranted, the preoperational and operational monitoring locations should coincide. |
| | 6-2 | 3 | General | The use of the word "each" is excessive and does not provide specific guidance to the applicant. For example "...each time of interest," can imply sampling frequency, duration and/or season. |
| 6.1 | 6-2 | 4 | last | <u>REPLACE</u> : ", scheduling..." with "frequency and duration". |
| 6.1.2.2 | 6-4 | 1 | 3 | <u>ADD</u> the underlined: "...through aquifers to surface water bodies and nearest downgradient well." |
| 6.1.4.1 | 6-5 | 2 | 1 | Previous sections have been entitled Geology. The title of this subsection, "Geology and Soils", calls for soils data which was not required in earlier sections. If the preceding comments regarding soils are incorporated, other sections in chapters 2, 4 & 5 should include descriptions and/or impacts to soils. This subsection should be revised to identify the physical and chemical parameters of the site(s) soils and any project-related impacts (e.g., erosion, runoff, nutrient leaching due to storage). |
| 6.2 | 6-6 | 3 | General | The introductory paragraph should be expanded to include statements similar to the following: The project-related activities which generically or, as a result of the assessments in sections 3-5, have the potential to adversely affect the environment should be considered for operational monitoring. A detailed discussion should be provided for deleting or, for existing facilities, reducing specific items from the monitoring programs. |
| 8 | 8-1 | General | | This chapter does not provide adequate guidance to the applicant regarding cumulative impacts and adverse effects which may occur after operation. (Also see comments on section 2.3). |
| 9 | 9-1 | 1 | a | <u>ADD</u> : These plans should provide sufficient details (e.g., horizontal: vertical slope, type of cover, sources and thicknesses of cover materials, revegetation species, and time-frame from shutdown through final reclamation) for the staff to assess the suitability of these plans when compared to other alternatives. |
| | | 2 | b | <u>DELETE</u> the second line of this statement and replace with the following: "...applicable criterion (i.e., twice background, 3 pCi/m ² -sec, etc.)." |
| 10 | 10-1 | General | | More specific details regarding alternatives should be required. They should include: a) at least one and possibly 2 alternative sites with environmental data bases similar to the preferred site (see comment on section 3.5). b) various methods considered for tailings stabilization and management; e.g., above-ground versus below-ground storage, vegetative: physical:chemical stabilization options, a comparative dollar cost of the more feasible alternatives. c) a cursory examination (depending on distance from the proposed site) of expanding an existing mill owned by the applicant rather than a new mill. Possible benefits of existing mill expansion include: 1) existing communities may develop in a more orderly fashion and 2) reduced environmental effects by expanding existing tailing piles. d) if the mill is 50 miles or less from existing mills, the applicant should consider the alternative of having "others" mill the uranium. This alternative would be considered close to a "no action" alternative particularly when "c" is not feasible, owing to the unlikely circumstance that the applicant would own an existing mill in the vicinity of the proposed mill. |

Page vi Among the environmental considerations which must be discussed are:

- b. Any adverse environmental effects which can not be avoided should the proposal be implemented,
- d. The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity.

Neither of these has been given a major topic heading in the Guide.

Page 3-1 Mines are sometimes many miles from the mill and some mills are supplied ore from several mines many miles distant from the mill and owned by operators different from the mill owner. In these cases, determining the combined effects of mill and mine effluents may be nearly impossible.

Section 2.9 The paragraph beginning "The discussion of species-environment
Page 2-11 relationships . . ." could be deleted as the information requested, if needed for a specific case, should be readily available to the specialist preparing the environmental statement.

Page 4-2 In the last paragraph, the discussion of water use should include the impact of mill activities on downstream uses of the water.

Page 4-3 The irreversible and irretrievable commitment of water as a
Paragraph 4.2 resource should be specifically identified as requiring attention.

Page 5-6 Same comments as for Page 4-3, Paragraph 4.2.
Paragraph 5.6

Page 5-6 The effects of chemical wastes on surface water as well as
Paragraph 5.3 on ground water should be discussed. Included in this discussion should be the potential for affecting downstream uses of the surface water because of chemical contamination.

Page 5-2 The radiological impact on biota other than man is an issue
Paragraph 5.1 secondary in importance to the impact on man and is usually treated in the EIS in one short paragraph. The data required under paragraphs 5.1.1 and 5.1.2 are similar to that required under 5.2.1 and 5.2.2 and 5.2.3 but with the major difference of requiring data on pathways to flora and fauna not necessarily also on the pathway to man. There is little data of that sort and no particular use would be made of it anyway. The impact of radioactive materials on man is the important issue that should receive the major effort and prominence in Chapter 5.

We suggest the following rewording for the sections indicated.

6.1.3 Air

The applicant should describe the program for obtaining information on local air quality and local and regional meteorology.

6.1.3.1 Meteorology. The applicant should identify sources of meteorological and air quality data used in the atmospheric transport models and reported

in Section 2.8. Locations and elevations of observation stations, instrumentation, and frequency and duration of measurements should be specified both for the applicant's measuring activities and for activities of governmental agencies or other organizations on whose information the applicant intends to rely. If adequate and representative off-site meteorological data required to estimate the local dispersive power of the atmosphere is not available, the applicant shall maintain an onsite weather station to measure wind speed, wind direction and atmospheric stability for a period of at least one year prior to operation of the facility. The exposure of the sensors should be representative of that of the point(s) of release of radioactive gases and other materials to the atmosphere.

Guidance for an acceptable onsite meteorological measurement program and for data format is presented in Section 2.8 and in Regulatory Guide 1.23 (Safety Guide 23), "Onsite Meteorological Programs." The description should show the basis for predicting such effects as the dispersion of airborne effluents and should present the methodology for gathering baseline data.

6.3.3.2 Models. Any models used by the applicant, either to derive estimates of basic meteorological information or to estimate the effects of effluents, should be referenced or described in detail and their validity and accuracy discussed. Staff guidance should be sought in adapting existing guidance such as provided in Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion for Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors," to the particular effluents from uranium mines and mills.

6.2.3 Meteorological Monitoring

The applicant's program for monitoring onsite meteorological phenomena (if required) needed to estimate the local dispersive power of the atmosphere for both routine and accident conditions should be described. A minimum on-site program would include the measurement of wind speed and direction at 10 m plus an index of atmospheric stability. Data should be recorded hourly; monthly, quarterly and annual summaries prepared in the format suggested in Section 2.8 and in Regulatory Guide 1.23. These summaries should be forwarded to NRC as soon as quarterly (semi-annually?).

If representative offsite data are adequate to estimate local dispersion, the applicant will provide monthly, quarterly and annual summaries of these data to NRC.