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#### ATOMIC ENERGY COMMISSION

#### [10 CFR Part 12]

#### GRAND JUNCTION REMEDIAL ACTION CRITERIA

Notice is hereby given that the General Manager of the United States Atomic Energy Commission (AEC) has established criteria for determination by the AEC of the need for, priority of and selection of appropriate remedial action to limit the exposure of individuals in the area of Grand Junction, Colorado to radiation emanating from uranium mill tailings which have been used as a construction-related material. AEC participation in a State of Colorado program to assess and undertake such remedial action was authorized by Public Law 92-314, enacted on June 16, 1972.

Written comments on proposed criteria were solicited by AEC in 37 F.R. 22391, dated October 19, 1972. All comments received were taken into consideration in the establishment of the criteria.

#### Part 12

#### GRAND JUNCTION REMEDIAL ACTION CRITERIA

Section

- 12.1 Purpose.
- 12.2 Scope.
- 12.3 Definitions.
- 12.4 Interpretations.
- 12.5 Communications.
- 12.6 General radiation exposure level criteria for remedial action.
- 12.7 Criteria for determination of possible need for remedial action.
- 12.8 Determination of possible need for remedial action where criteria have not been met.
- 12.9 Factors to be considered in determination of order of priority for remedial action.

12.10 Selection of appropriate remedial action.

Authority: The provisions of this Part 12 issued under Section 203, 86 Stat. 226.

## § 12.1 Purpose

(a) The regulations in this Part establish the criteria for determination by the Commission of the need for, priority of and selection of appropriate remedial action to limit the exposure of individuals in the area of Grand Junction, Colorado to radiation emanating from uranium mill tailings which have been used as a construction-related material.

(b) The regulations in this Part are issued pursuant to Public Law 92-314 (86 Stat. 222) of June 16, 1972.

§ 12.2 Scope

The regulations in this Part apply to all structures in the area of Grand Junction, Colorado, under or adjacent to which uranium mill tailings have been used as a construction-related material between January 1, 1951 and June 16, 1972, inclusive.

§ 12.3 Definitions

As used in this part:

(a) "Area of Grand Junction, Colorado" means Mesa County, Colorado.

(b) "Background" means radiation arising from cosmic rays and radioactive material other than uranium mill tailings.

(c) "Commission" means the United States Atomic Energy Commission or any duly authorized representative thereof.

(d) "Construction-related material" means any material used in the construction of a structure.

(e) "External gamma radiation level" means the average gamma radiation exposure rate for the habitable area of a structure as measured near floor level.

(f) "Indoor radon daughter concentration level" means that concentration of radon daughters determined by (1) averaging the results of 6 air samples each of at least 100 hours duration, and taken at a minimum of 4-week intervals throughout the year in a habitable area of a structure or (2) utilizing some other procedure approved by the Commission.

(g) "Milliroentgen" (mR) means a unit equal to one-thousandth (1/1000) of a roentgen which roentgen is defined as an exposure dose of X or gamma radiation such that the associated corpuscular emission per 0.001293 grams of air produces, in air, ions carrying one electrostatic unit of quantity of electricity of either sign.

(h) "Radiation" means the electromagnetic energy (gamma) and the particulate radiation (alpha and beta) which emanate from the radioactive decay of radium and its daughter products.

(i) "Radon daughters" means the consecutive decay products of radon-222. Generally, these include Radium A (polonium-218), Radium B (lead-218), Radium C (bismuth-214), and Radium C' (polonium-214).

(j) "Remedial action" means any action taken with a reasonable expectation of reducing the radiation exposure resulting from uranium mill tailings which have been used as construction-related material in and around structures in the area of Grand Junction, Colorado.

(k) "Surgeon General's guidelines" means radiation guidelines related to uranium mill tailings prepared and released by the Office of the U.S. Surgeon General, Department of Health, Education and Welfare on July 27, 1970.

(1) "Uranium mill tailings" means tailings from a uranium milling operation involved in the Federal uranium procurement program.

(m) "Working Level" (WL) means any combination of short-lived radon daughter products in 1 liter of air that will result in the ultimate emission of  $1.3 \times 10^5$  MeV of potential alpha energy.

### § 12.4 Interpretations

Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this Part by any officer or employee of the Commission other than a written interpretation by the General Counsel will be recognized to be binding upon the Commission.

#### § 12.5 Communications

Except where otherwise specified in this Part, all communications concerning the regulations in this Part should be addressed to the Director, Division of Operational Safety, U.S. Atomic Energy Commission, Washington, D. C., 20545.

#### § 12.6 General radiation exposure level criteria for remedial action

The basis for undertaking remedial action shall be the applicable guidelines published by the Surgeon General of the United States. These guidelines recommend the following graded action levels for remedial action in terms of external gamma radiation level (EGR) and indoor radon daughter concentration level (RDC) above background found within dwellings constructed on or with uranium mill tailings:

EGR	RDC	<b>Recommendation</b>
Greater than 0.1 mR/hr	Greater than 0.05 WL	Remedial action indicated
From 0.05 to 0.1 mR/hr	From 0.01 to 0.05 WL	Remedial action may be <sup>.</sup> suggested
Less than 0.05 mR/hr	Less than 0.01 WL	No remedial action indicated

#### § 12.7 Criteria for determination of possible need for remedial action

Once it is determined that a possible need for remedial action exists the record owner of a structure shall be notified of that structure's eligibility for an engineering assessment to confirm the need for remedial action and to ascertain the most appropriate remedial measure, if any. A determination of possible need will be made if as a result of the presence of uranium mill tailings under or adjacent to the structure, one of the following criteria is met: (a) Where Commission approved data on indoor radon daughter concentration levels are available:

(i) for dwellings and schoolrooms: An indoor radon daughter concentration level of 0.01 WL or greater above background.

(ii) For other structures: An indoor radon daughter concentration level of 0.03 WL or greater above background.

(b) Where Commission approved data on indoor radon daughter concentration levels are not available:

(i) For dwellings and schoolrooms:

(a) An external gamma radiation level of 0.05 mR/hr or greater above background.

(b) An indoor radon daughter concentration level of 0.01 WL or greater above background (presumed).

(1) It may be presumed that if the external gamma radiation level is equal to or exceeds 0.02 mR/hr above background, the indoor radon daughter concentration level equals or exceeds 0.01WL above background.

(2) It should be presumed that if the external gamma radiation level is less than 0.001 mR/hr above background, the indoor radon daughter concentration level is less than 0.01 WL above background, and no possible need for remedial action exists.

(3) If the external gamma radiation level is equal to or greater than 0.001 mR/hr above background but is less than 0.02 mR/hr above background, measurements will be required to ascertain the indoor radon daughter concentration level.

(11) For other structures:

(a) An external gamma radiation level of 0.15 mR/hr above background averaged on a room-by-room basis.

(b) No presumptions shall be made on the external gamma radiation level / indoor radon daughter concentration level relationship. Decisions will be made in individual cases based upon the results of actual measurements.

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# § 12.8 Determination of possible need for remedial action where criteria have not been met

The possible need for remedial action may be determined where the criteria in § 12.7 have not been met if various other factors are present. Such factors include, but are not necessarily limited to, size of the affected area, distribution of radiation levels in the affected area, amount of tailings, age of individuals occupying affected area, occupancy time, and use of the affected area.

#### § 12.9 Factors to be considered in determination of order of priority for remedial action

In determining the order of priority for execution of remedial action, consideration shall be given, but not necessarily limited to, the following factors:

(a) <u>Classification of structure</u>. Dwellings and schools shall be considered first.

(b) <u>Availability of data</u>. Those structures for which data on Indoor radon daughter concentration levels and/or external gamma radiation levels are available when the program starts and which meet the criteria in § 12.7 will be considered first.

(c) Order of application. Insofar as feasible remedial action will be taken in the order in which the application is received.

(d) <u>Magnitude of radiation level</u>. In general, those structures - with the highest radiation levels will be given primary consideration.

(e) <u>Geographical location of structures</u>. A group of structures located in the same immediate geographical vicinity may be given priority consideration particularly where they involve similar remedial efforts.

(f) <u>Availability of structures</u>. An attempt will be made to schedule remedial action during those periods when remedial action can be taken with minimum interference.

(g) <u>Climatic conditions</u>. Climatic conditions or other seasonal considerations may affect the scheduling of certain remedial measures.

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#### § 12.10 Selection of appropriate remedial action

(a) Tailings will be removed from those structures where the appropriately averaged external gamma radiation level is equal to or greater than 0.05 mR/hr above background in the case of dwellings and schools and 0.15 mR/hr above background in the case of other structures.

(b) Where the criterion in (a) is not met, other remedial action techniques, including but not limited to sealants, ventilation, and shielding may be considered in addition to that of tailings removal. The Commission shall select the remedial action technique, or combination of techniques, which it determines to be the most appropriate under the circumstances.

Dated this 27 day of Mor. 1972

John A. Erlewine, Acting General Manager



# ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

# October 13, 1972

Director Office of the Federal Register National Archives and Records Service Washington, D. C. 20408

#### Dear Sir:

Attached for publication in the Federal Register are an original and two certified copies of a document entitled:

#### 10 CFR PART 12 \*\*

# GRAND JUNCTION REMEDIAL ACTION CRITERIA

Publication of the above document at the earliest possible date would be appreciated.

Sincerely,

Paul C. Bender Secretary of the Commission  $\mathcal{FR}^{\mathcal{FR}}_{\mathcal{N}}^{\mathcal{A}}\mathcal{A}^{\mathcal{A}}$ 

Enclosures: Original and 2 certified copies

bcc: Docket Clerk (Dir. of Reg.) Information Services Legal Files (OGC) Office of Congressional Relations GT Files (SECY) Public Proceedings Branch (SECY) -Contracts

\*\*\* Resubmittal of document submitted on October 4 and withdrawn on October 5, 1972.

#### ATOMIC ENERGY COMMISSION

#### [10 CFR PART 12]

#### GRAND JUNCTION REMEDIAL ACTION CRITERIA

Notice is hereby given that the General Manager of the United States Atomic Energy Commission (AEC) is proposing to establish criteria for determination by the AEC of the need for, priority of and selection of appropriate remedial action to limit the exposure of individuals in the area of Grand Junction, Colorado to radiation emanating from uranium mill tailings which have been used as a construction-related material. AEC participation in a joint Federal-State of Colorado program to assess and undertake such remedial action was authorized by Public Law 92-314, enacted on June 16, 1972.

Written comments on these criteria will be received by the Secretary, United States Atomic Energy Commission, Washington, D. C. 20545, for a period of thirty (30) days after publication of this notice in the Federal Register.

(Authority: The provisions of this Part 12 issued under section 203, 86 Stat. 226)

PART 12 - GRAND JUNCTION REMEDIAL ACTION CRITERIA § 12.1 Purpose

(a) The regulations in this Part establish the criteria for determination by the Commission of the need for, priority of and selection of appropriate remedial action to limit the exposure of individuals in the area of Grand Junction, Colorado to radiation emanating from uranium mill tailings which have been used as a construction-related material.

(b) The regulations in this Part are issued pursuant to Public Law 92-314 (86 Stat. 222) of June 16, 1972.

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#### § 12.3 Definitions

As used in this part:

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(c) "Commission" means the United States Atomic Energy Commission or any duly authorized representative thereof.

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(e) "External gamma radiation level" means the average gamma radiation exposure rate for the habitable area of a structure as measured near floor level.

(f) "Indoor radon daughter concentration level" means that concentration of radon daughters determined by (1) averaging the results of 6 air samples each of at least 100 hours duration, and taken at a minimum of 4-week intervals throughout the year in a habitable area of a structure or (2) utilizing some other procedure approved by the Commission.

(g) "Milliroentgen" (mR) means a unit equal to one-thousandth (1/1000) of a roentgen which roentgen is defined as an exposure dose of X or gamma radiation such that the associated corpuscular emission per 0.001293 grams of air produces, in air, ions carrying one electrostatic unit of quantity of electricity of either sign.

(h) "Radiation" means the electromagnetic energy (gamma) and the particulate radiation (alpha and beta) which emanate from the radioactive decay of radium and its daughter products.

(1) "Radon daughters" means the consecutive decay products of radon-222. Generally, these include Radium A (polonium-218), Radium B (lead-218), Radium C (bismuth-214), and Radium C' (polonium-214).

(j) "Remedial action" means any action taken with a reasonable expectation of reducing the radiation exposure resulting from uranium mill tailings which have been used as construction-related material in and around structures in the area of Grand Junction, Colorado,

(k) "Surgeon General's guidelines" means radiation guidelines related to uranium mill .ailings prepared and released by the Office of the U. S. Surgeon General, Department of Health, Education and Welfare on July 27, 1970.

(1) "Uranium mill tailings" means tailings from a uranium milling operation involved in the Federal uranium procurement program.

(m) "Working Level" (WL) means any combination of short-lived radon daughter products in 1 liter of air that will result in the ultimate emission of 1.3 x 10<sup>5</sup> MeV of potential alpha energy.

#### § 12.4 Interpretations

Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this Part by any officer or employee of the Commission other than a written interpretation by the General Counsel will be recognized to be binding upon the Commission.

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The basis for undertaking remedial action shall be the applicable guidelines published by the Surgeon General of the United States. These guidelines recommend the following graded action levels for remedial action in terms of external gamma radiation level (EGR) and indoor radon daughter concentration level (RDC) above background found within dwellings constructed on or with uranium mill tailings:

EGR	RDC	Recommendation
Greater than 0.1 mR/hr	Greater than 0.05 WL	Remedial action indicated
From 0.05 to 0.1 mR/hr	From 0.01 to 0.05 WL	Remedial action may be suggested
Less than 0.05 mR/hr	Less than 0.01 WL	No remedial action indicated

## § 12.7 Criteria for determination of possible need for remedial action

Once it is determined that a possible need for remedial action exists the record owner of a structure shall be notified of that structure's eligibility for an engineering assessment to confirm the need for remedial action and to ascertain the most appropriate remedial measure, if any. A determination of possible need will be made if as a result of the presence of uranium mill tailings under or adjacent to the structure, one of the following criteria is met:

(a) Where Commission approved data on indoor radon daughter concentration levels are available:

(i) For dwellings and school rooms: An indoor radon daughter concentration level of 0.01 WL or greater above background.

(ii) For other structures: An indoor radon daughter concentration level of 0.03 WL or greater above background.

(b) Where Commission approved data on indoor radon daughter concentration levels are not available:

(i) For dwellings and school rooms:

(a) An external gamma radiation level of 0.05 mR/hr or greater above background.

(b) An indoor radon daughter concentration level of 0.01 WL or greater above background (presumed).

(1) It shall be presumed that if the external gamma radiation level is equal to or exceeds 0.02 mR/hr above background, the indoor radon daughter concentration level equals or exceeds 0.01 WL above background.

(2) It shall be presumed that if the external gamma radiation level is less than 0.001 mR/hr above background, the indoor radon daughter concentration level is less than 0.01 WL above background, and no possible need for remedial action exists.

(3) If the external gamma radiation level is equal to or greater than 0.001 mR/hr above background but is less than 0.02 mR/hr above background, measurements will be required to ascertain the indoor radon daughter concentration level.

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#### (ii) For other structures:

(a) An external gamma radiation level of 0.15 mR/hr above background averaged on a room-by-room basis.

(b) No presumptions shall be made on the external gamma radiation level / indoor radon daughter concentration level relationship. Decisions will be made in individual cases based upon the results of actual measurements.

# § 12.8 Determination of possible need for remedial action where criteria have not been met

The possible need for remedial action may be determined where the criteria in § 12.7 have not been met if various other factors are present. Such factors include, but are not necessarily limited to, size of the affected area, distribution of radiation levels in the affected area, amount of tailings, and use of the affected area.

§ 12.9 Order of priority of remedial action

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In determining the order of priority for execution of remedial action, consideration shall be given, but not necessarily limited to, the following factors:

(a) <u>Classification of structure</u>. Dwellings and schools shall be considered first.

(b) <u>Availability of data</u>. Those structures for which data on indoor radon daughter concentration levels and/or external gamma radiation levels are available when the program starts and which meet the criteria in § 12.7 will be considered first.

(c) Order of application. Insofar as feasible remedial action will be taken in the order in which the application is received.

(d) <u>Magnitude of radiation level</u>. In general, those structures with the highest radiation levels will be given primary consideration.

(e) <u>Geographical location of structures</u>. A group of structures located in the same immediate geographical vicinity may be given priority consideration particularly where they involve similar remedial efforts.

(f) <u>Availability of structures</u>. An attempt will be made to schedule remedial actio, during those periods when remedial action can be taken with minimum int, ference.

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(g) <u>Climatic conditions</u>. Climatic conditions or other seasonal considerations may affect the scheduling of certain remedial measures.

#### § 12.10 Selection of appropriate remedial action.

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(a) Tailings will be removed from those structures where the appropriately averaged external gamma radiation level is equal to or greater than 0.05 mR/hr above background in the case of dwellings and schools and 0.015 mR/hr above background in the case of other structures.

(b) Where the criterion in (a) is not met, other remedial action techniques, including but not limited to sealants, ventilation, and shielding may be considered in addition to that of tailings removal. The Commission shall select the remedial action technique, or combination of techniques, which it determines to be the most appropriate under the circumstances.

Dated this <u>28 day of September</u>, 1972

Hollingsworth, General Manager Ε.



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

PUBLIC HEALTH SERVICE FOOD AND DRUG ADMINISTRATION ROCKVILLE, MARYLAND 20852

NOV 21 1972

Secretary U.S. Atomic Energy Commission Washington, D.C. 20545

Dear Sir:

The General Manager of the U.S. Atomic Energy Commission has recently proposed criteria for determination by the AEC of the need for, priority of, and selection of appropriate remedial action to limit exposure of individuals in the area of Grand Junction, Colorado, to radiation emanating from uranium mill tailings which have been used as construction related material. The criteria are pursuant to Public Law 92-314 which establishes AEC authority in such determinations and specifies that the applicable guidelines of the Surgeon General be used as a basis for action. The criteria were published as a Notice of Proposed Rule Making in the FEDERAL REGISTER (Vol. 37, No. 203, Thursday, October 19, 1972) and comments were requested. The document has been reviewed by the Bureau of Radiological Health and the enclosed comments were made.

Sincerely yours

John C. Villforth Director Byreau of Radiological Health

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#### BUREAU OF RADIOLOGICAL HEALTH

#### COMMENTS ON PROPOSED AEC CRITERIA FOR GRAND JUNCTION REMEDIAL ACTION

1. It would seem appropriate to accompany the proposed criteria with an environmental impact statement including estimates of the number of structures which may contain uranium mill tailings, projected dose to occupants and the reduction in dose which may be expected from various forms of remedial action, i.e., sealants, ventilation and shielding.

2. Two distinct interpretations of the first paragraph of Section 12.7 outlining the purpose of the criteria are possible. It is not clear if the criteria are intended to be used to determine eligibility for remedial action, or to determine eligibility for further assessments, i.e., confirming measurements by AEC representatives. If the Commission intends the criteria to be used as a basis for remedial action, yet wishes to retain the right to confirm measurements made by other authorities, this intention could be stated elsewhere.

3. The Surgeon General's Guidelines refer only to dwellings and are based on an assumption of continuous exposure. In establishing action levels for other structures in Section 12.7(a)(2) and Section 12.7(b)(2)(i), it appears that an occupancy factor of one third has been applied. If this figure is felt to reasonably represent occupancy, it should be so stated. However, it should be recognized that an extrapolation of this type does not consider the possibility that individuals who work in structures containing uranium mill tailings may live in structures which also contain tailings. Such an individual could receive a total annual dose of 700 mrem at the lower limit of possible remedial action. Perhaps this possibility should be considered in Section 12.8 which deals with the determination of need for remedial action where the criteria have not been met.

The application of criteria to schoolrooms which are identical to those applied to dwellings appears reasonable in light of FRC recommendations concerning radiation exposure of young children. However, the term "schoolroom" should be defined to include any structures where children are engaged in recreational activity for prolonged periods of time, such as municipal recreational facilities and nursery schools, and should exclude colleges, training schools and similar educational facilities.

4. Section 12.7, paragraph b. In cases where Commission approved data on indoor radon daughter concentration levels are not available, an external gamma radiation level of .02 mR/hr (Section 12.7(b)(1)(ii)(a)), becomes the determining criterion for remedial action with respect to dwellings and schoolrooms. The additional criterion of an external gamma radiation level of .05 mR/hr in Section 12.7(b)(1)(i) is superseded by the .02 mR/hr value in Section 12.7(b)(1)(ii)(a).

5. It is assumed that the concept of "presumed indoor radon daughter concentration" in Section 12.7(b)(1)(ii)(a) is based on AEC experimental data which establishes a correlation between EGR and RDC levels. If such a correlation is the basis for the presumption of an RDC greater than .01 WL in cases where the measured EGR is greater than .02 mR/hr, then

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an EGR level of .15 mR/hr implies an RDC of .075 WL if a linear relationship is assumed. The criterion for determination of need for remedial action with respect to structures other than dwellings and schools in Section 12.7(b)(2)(i) is then inconsistent with the critical RDC of .03 WL in Section 12.7(a)(2) applying to cases where Commission approved data are available. For consistency, it is suggested that the previously applied occupancy factor of one third be also applied in cases where RDC data are not available for structures other than dwellings and schools, and that an EGR of .06 mR/hr be the lower limit in determining a need for remedial action in cases where Commission approved RDC data are not available for such structures.

6. Confusion could arise over the relationship between the sequence in which factors determining the order of priority for remedial action are listed in Section 12.9, and their relative importance in such a determination. For this reason, it is suggested that these factors should be listed in their order of importance.

7. The criteria for selection of appropriate remedial action in Section 12.10 are based solely on EGR levels, whereas criteria for the determination of possible need for remedial action include both EGR and RDC levels. For purposes of consistency, it is recommended that both factors be used in the criteria indicating tailing removal, i.e., in the case of

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dwellings or schools, an EGR of .05 mR/hr or an RDC of .01 WL, and in the case of other structures, an EGR of .15 mR/hr or an RDC of .03 WL.

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8. There is a typographical error in Section 12.10(a). The stated level of .015 mR/hr indicating tailing removal for structures other than dwellings and schools should be .15 mR/hr to be consistent with Section 12.7(b)(2)(i).

196 Thompson Road EDOTET NUMBER PR -12 Caraul Junction, Colo. 81501 PROPOSED RULE Grand Tunction Remed Action Criteria November 14,15 Æ. MR. & MRS, ROY C. KURKMAN 198 THOMPSON ROAD BRAND JUNCTION, GOLORADO 81801 Dear Sn I would like to comment, or express an apr reguedo to "Grand fu Remedeel Action Cuiteria", ID CFR Acknowledged Part 12 11-21-72,075 I feel, as at many attack conce home awners, that the AEC should Seed to any home anner whose house has been Auverged, but found to contain radiation before that level recomme for remarked action, a little stating the radiation level for the property is below that level which could be injunious, and is safe under all conditiones of Occupany. the government, under this program, should either make each dwelling sales cutify their as already safe DOCKETED Sincerly your Koy C ...



Re: Comment on the Proposed Rules and Regulations of the Atomic Energy Commission (10CFR Part 12) Appearing in Federal Register, Volume 37, No. 203

Dear Mr. Secretary:

Colorado Rural Legal Services represents low income people in Grand Junction, Colorado. Colorado Rural Legal Services feets the proposed regulations cited above made pursuant to P.L. 92-314 will affect its clients and other low income people and residents in Grand Junction and the surrounding area. Because of this Colorado Rural Legal Services takes this opportunity to comment on the proposed regulations and asks that these comments be considered by the Secretary of the United States Atomic Energy Commission in preparing the final regulations.

Objection is made to Section 12.6 of the proposed regulations which provides that the guidelines published by the Surgeon General of the United States be the basis for undertaking remedial action. The use of these guidelines along prohibits the Atomic Energy Commission, its delegates and agents, to take into consideration non-health factors such as economic conditions and economic depression resulting from the existance of tailings in the structures, on land without structures and in the area of the structure. Objection is made to this result and the fact that these economic considerations will be ignored if the Surgeon General's guidelines are the sole basis of action under the regulations.

Section 12.7 of the proposed regulations provides that only the record owner be notified that the structure is eligible for an engineering assessment to confirm the need of remedial action and to ascertain the appropriate remedial action. The regulations should go further and provide that the person in possession, whether he be a tenant, roomer or owner by unrecorded contract or whoever has any legal, equitable or possessory interest in the property be notified of the structure's eligibility for an engineering assessment for confirmation of the need for remedial action and the type of remedial action that should be used. Where the structures are used by the public the public should also be notified of these matters. The regulations should provide that the notice must be given in Spanish and in English. The Spanish language is the major language of many families of this area. Many people

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here can speak only Spanish and speak and read no English. If notice is given only in English the notice may be of no use to the recipient and that recipient may, as a result, lose his opportunity to benefit from the act and the regulations. Notice should also be given to all persons who possess or have any legal or equitable interest in land which does not have a structure but which would otherwise qualify for an engineering assessment as spoken of in Section 12.7 of the proposed regulations.

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> Objection is made to Section 12.7 of the proposed regulations in the way it presumes that if the external gamma radiation level is less than 0.001 mR-hr. above background, the indoor radon daughter concentration level is less than 0.01 wl above background, and no possible need for remedial action exists. This presumption, again, ignores the real economic depression that many owners and people with possessory interests in structures have experienced because of levels lower than stated in Section 12.7.

Section 12.7 of the proposed regulations is also objectionable by giving preference to dwellings and school rooms in the determination of possible need as a result of the presence of uranium mill tailings in those structures. PL92-314 does not authorize this preference. The preference does injury to other types of structures. Other types of structures should have the same standard for indoor radon daughter concentration as dwellings and school rooms. The preference given to dwellings and school rooms excludes dormitories, hospitals, roominghouses, hotels, motels, apartment houses, jails and many other types of buildings in which the public spends a large amount of time.

A further objection to Section 12.7 of the proposed regulations is that the determination of need for remedial action should be conclusive rather than possible if the criteria of Section 12.7 (a) thru (b) are met. The provision in that section that if structures meet the criteria that only establishes a <u>possibility of need</u> for remedial action leaves unlimited discretion with the United States Atomic Energy Commission to determine the need itself.

Objection is made to Section 12.8 of the proposed regulations in that the criteria set forth in there are too general, will permit abuse and favoritism. The criteria in Section 12.8 have no relationship to the economic dangers and health dangers imposed on the Grand Junction community by the presence of uranium mill tailings.

The classifications of structures, of dwellings and schools and the preference given to them in Section 12.9 of the proposed regulations are objected to on the same grounds aswere the criteria set forth in Section 12.7 of the proposed regulations.

The provision in Section 12.9 (c) providing a priority of remedial action be given to persons who sent in their applications first is objectionable because it does not insure fairness in the treatment of the applications or the problem of the uranium mill tailings. To insure fairness and still give priority to those on a first come first serve basis the regulations should provide that the notices should be sent out at the same time and that applications can be made for remedial work only after all engineering appraisals have been made and only after all interested people have received notice of the results of the appraisals.

Objection is made to Section 12.9 (e) in giving priority of remedial action to geographical locations. That provision of the proposed regulations is too generally worded and establishes a basis for abuse. As it is written it can only favor the more affluent owners who have purchased structures in subdivisions.

Objection is made to Section 12.10 (a). This subsection gives an unfair priority to dwellings and schools. The objection to this priority has been stated above. Further objection is made to this section because it fails to recognize and deal with the economic factors and depression that owners are presently faced with who have uranium mill tailings in or near their structure. The presence of these tailings is indicated to prospective buyers and users. This economic depression will continue to exist unless the tailings are removed.

The subsection is further objectionable because there are no standards set forth by this regulation for the Atomic Energy Commission to follow to determine which method of remedial action is to be used. Consequently the Atomic Energy Commission is left with unlimited discretion.

Very truly yours, Charles A. Buss

Attorney at Law

CAB/brh

cc: Congressman Aspinal

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE PUBLIC HEALTH SERVICE FOOD AND DRUG ADMINISTRATION ROCKVILLE, MARYLAND 20052

November 17, 1972

Secretary U. S. Atomic Energy Commission Washington, D.C. 20545

Attention: Mr. Karas

Dear Sir:

This letter is to confirm the request made by this office on November 17, 1972, for an extension to the period allowed for comments to the AEC on proposed criteria for Grand Junction remedial action published in the FEDERAL REGISTER (Vol. 37, No. 203, Thursday, October 19, 1972). We feel that this extension is warranted in view of the fact that the Bureau of Radiological Health was involved in the development of the Surgeon General's Guidelines and has prepared significant comments on the proposed criteria. Our comments will be transmitted to the AEC by November 24, 1972.

Sincerely yours,

Manhan Thetto

Marshall S. Little Director Office of Criteria and Standards Bureau of Radiological Health



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Robert W. Buechner Michigan Law School Lawyers Club Ann Arbor, Michigan 48104

DOCTOR HUMBER PROPOSED RULE Grand Junction Remedial Action Criteria

November 17, 1972

Secretary, U.S. Atomic Energy Commission Washington, D.C. 20545

COMMENTS ON PROPOSED CRITERIA FOR GRAND JUNCTION REMEDIAL ACTION

Public Law 92-311, says that the United States assumes " compassionate responsibility ... to limit the exposure of individuals to radiation emanating from uranium mill tailings which have been used as a construction related material in the area of Grand Junction." The criteria recently proposed by the U.S. Atomic Energy Commission (AEC) fail to reflect the " compassionate responsibility of the United States."

First, the AEC still seems to be toying with the idea of using a sealant or shielding where remedial action is required instead of planning to physically remove the tailings. This proposal hardly merits serious consideration. The half-life of radium is over 1600 years, which means that the problem with Grand Junction will not be a short lived one. Any attempt to indulge in expedient solutions will result in long-term consequences. Over a long period of time walls crack, moisture corrodes, and movement in structures occurs. Any of these common occurrences would make the remedial use of sealant a worthless gesture. The only remedial action that is satisfactory in the long run is to physically remove the tailings.

Secondly, the "external gamma radiation level" as defined in section 12.3. of the criteria and as used in section 12.7 will result in further, unnecessary delays and the potential bypassing of hazardous radiation conditions. Although the AEC is presently locked into using the Surgeon General's Guidelines, it is not required to average the gamma readings over the entire habitable area in order to determine whether remedial action should be taken. Indeed, the nature of the problem calls for a different approach. Because tailings were often used under patios on which additional rooms were built or in spot locations under a foundation, the test for remedial action should be done on a room-by-room basis. Otherwise the individual homeowners of Grand Junction will be required to bear the cost of economic diminution of value of their homes and/or to suffer the health consequences of being exposed to potentially hazardous levels of radiation. In order to reflect the"compassionate responsibility of the United States," the AEC should physically remove all the tailings that come under any reasonable interpretation of the Surgeon General's Guidelines.

Finally, we urge the AEC to go even further than just removing tailings which result in radiation levels that fall within the Surgeon General's Guidelines. The Surgeon General himself, in material submitted to the Joint Committee on Atomic Energy, has commented, "It seems universally agreed that there is no absolutely safe level of radiation exposure .... the risk of radiation exposure of the Grand Junction population from uranium mill tailings remains unresolved."

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Because there is absolutely no benefit associated with not removing the tailings, there is no justification for exposing the people of Grand Junction to undetermined hazards and risks. Thousands of dollars are spent every year on nuclear power plants to limit exposure to the lowest practicable level for people in nearby areas - far below the Surgeon General's Guidelines. The same concern should be evidenced for the people of Grand Junction. We urge the AEC to seek legislative authority so that it can have the power to take remedial action for any situation where the tailings have been identified as being under or near a home.

Robert W. Buchmen

Robert W. Buechner

These comments were written on behalf of the many people I met in Grand Junction while I was there as an EPA employee in 1970 and 1971 to monitor homes for the possible presence of uranium tailings.





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# INSTITUTE FOR PUBLIC INTEREST REPRESENTATION

#### GEORGETOWN UNIVERSITY LAW CENTER

ADRIAN S. FISHER, DEAN

PHILIP ELMAN, CHAIRMAN, BOARD OF TRUSTEES

November 13, 1972

600 NEW JERSEY AVE., N.W. WASHINGTON, D. C. 20001 TELEPHONE (202) 624-8390

VICTOR H. KRAMER, DIRECTOR RICHARD WOLF, DEPUTY DIRECTOR

> Secretary U. S. Atomic Energy Commission Washington, D. C. 20545

Re: Proposed Criteria for Grand Junction Remedial Action (10 C.F.R. Part 12)

Dear Mr. Secretary:

In response to the Commission's Notice which appeared in the Federal Register of Thursday, October 19, 1972, the Institute for Public Interest Representation hereby submits the attached comments on the proposed criteria for remedial action in Grand Junction, Colorado. The Institute is a nonprofit public interest organization engaged in the study of federal administrative agencies.

We also represent Ernestine Robles, Wilfred Trujillo, and Mary Rose Trujillo, three residents of Grand Junction who are deeply concerned with the problems of radiation contamination faced by people in that area. Presently, they are seeking identifiable radiation survey data pertaining to structures in Grand Junction.

If you have any questions concerning our comments, please contact any of the undersigned.

Sincerely, Victor H Kramer, Esd

Richard B. Wolf, Esq

Joel Zeldin, Esq.

Norman Spende

Norman Spindel

# INSTITUTE FOR PUBLIC INTEREST REPRESENTATION GEORGETOWN UNIVERSITY LAW CENTER

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PHILIP ELMAN, CHAIRMAN, BOARD OF TRUSTEES VICTOR H. KRAMER, DIRECTOR RICHARD WOLF, DEPUTY DIRECTOR

November 13, 1972

600 NEW JERBEY AVE., N W WASHINGTON, D. C. 20001 Telephone (202) 624-8390

# COMMENTS ON PROPOSED CRITERIA FOR GRAND JUNCTION REMEDIAL ACTION (10 C.F.R. Part 12)

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#### Sections 12.2 and 12.3

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Section 12.2 delineates the scope of the proposed regulations. That section makes the regulations applicable "to all structures in the area of Grand Junction, Colo., under or <u>adjacent</u> to which uranium mill tailings have been used" for construction purposes. (Emphasis added.) The word "adjacent" is not defined anywhere in the proposed regulations and is confusing.

To avoid ambiguity, the following definition should be added to section 12.3:

"Adjacent" means (1) the entire plot upon which a structure is built and (2) other nearby property which contains mill tailings and has a substantial effect on the radiation concentration of that structure.

Section 12.7

1. Under proposed section 12.7, once it is determined that remedial action may be appropriate, the owner is notified that his building is eligible for an engineering assessment to confirm the need for remedial action. The owner has the option of deciding whether or not additional tests will be conducted and whether or not indicated remedial action will be undertaken. (P.L. 92-314, Title II, Sec. 202(b); section 12.7, introductory paragraph; see also section 12.9(c).)

Under certain circumstances, an owner may prefer to forego needed repairs rather than to risk public disclosure that his structure was found to contain substantial concen- $\frac{1}{2}$  trations of radiation. In order to dissipate the incentive for bypassing corrective measures and to protect the public from inadvertent exposure to structures suspected of being

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<sup>1/</sup> The decision of an eligible owner to authorize further tests and repairs risks public disclosure, for example, through the appearance of testing repair equipment at his structure.

radiation hazards, after completion of the remedial program, the public should be informed as to what structures may have radiation levels in excess of the Surgeon General's guidelines. Accordingly, section 12.7 should be amended to provide for publication by the Commission of a document listing every structure which was eligible for additional testing or remedial action, but which received no additional attention because the owner failed to apply for such consideration.

2. Section 12.7(a) and (b) establish different criteria for eligibility for further testing depending upon whether or not the Commission possesses approved data on indoor radon daughter concentration levels. In situations where indoor radon daughter data is not available, the regulations propose a formula for using the external gamma radiation level to estimate the radon daughter level.

The proposed approach seems ill-advised. First, it is uncertain that a meaningful correlation exists between

- 3 -

gamma and radon levels. The unwillingness to interpolate from gamma levels to radon levels which is expressed in section 12.7(b)(2)(ii) implicitly acknowledges this uncer- $\frac{3}{4}$ tainty. (See also section 12.7(b)(1)(ii)(c).) Second,

2/ "Chairman Aspinall. From your experiments, what correlation or consistency of measurements do you find, if any, between gamma level, that is microroentgens per hour, and radon daughter level, that is working levels?

"Dr. Schiager. From my measurements, which is the way you asked the question, I find really no correlation. Most of the measurements have been made by the State health department or EPA. I think there is a general relationship: a high gamma ray exposure will indicate something abnormal, which could very likely be tailings.

"If there are tailings present, it is quite likely that the average radon concentration will be above normal background. That kind of general correlation is certainly true.

"But to try to mathematically express any kind of correlation -- I don't believe it can be done. . . ." (Emphasis added.) (Hearings Before the Subcomm. on Raw Materials of the Joint Comm. on Atomic Energy, Congress of the United States, 92d Cong., 1st Sess., October 28 and 29, 1971, at p. 171.)

3/ Section 12.7(b)(2)(ii) provides as follows: "No presumption shall be made on the external gamma radiation level/indoor radon daughter concentration level relationship. Decisions will be made in individual cases based upon the results of actual measurements." since the original survey conducted by EPA tested for both gamma and radon radiation, the number of structures for which the Commission has data on the external gamma radiation levels but not on the indoor radon daughter levels must be minimal.

Accordingly, it is suggested that additional tests be performed to ascertain the precise indoor radon daughter levels for all structures in Grand Junction. In this way, eligibility could be determined according to actual -rather than hypothesized -- radon daughter measurements, and the needs of all structures of a similar nature would be evaluated according to the same criteria.

3. Section 12.7 details the quantitative guidelines for determining when a structure is eligible for an engineering assessment "to confirm the need for remedial action and to ascertain the most appropriate remedial measure...." Subsection (a) applies only "where Commission approved data on indoor radon daughter concentration levels are available." When data on radon levels is available, that type of radiation is considered, and allother types are disregarded.

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The Surgeon General's guidelines (see section 12.6) recommend remedial action when the external gamma radiation level exceeds a specified minimum because that type of radiation can also pose a threat to health. More specifically, the Surgeon General's report states that external gamma radiation causes leukemia. (See Contract No. AT(05-1)-1621 between Federal Government, Atomic Energy Commission and Colorado, Appendix A, Paragraphs 2 and 5.) To be consistent with the provisions which establish the Surgeon General's guidelines as "the basis for undertaking remedial action" (P.L. 92-314, Title II, Sec. 202(a); see also section 12.6 of the proposed regulations), section 12.7(a) should be amended so that structures whose external gamma radiation measurements exceed the levels specified in those guidelines are made eligible for further tests and remedial action.

Furthermore, subpart (b) of section 12.7 indicates that both the external gamma radiation level and the indoor radon daughter concentration level should be considered. (See section 12.7(b)(1) and (2).) That approach should be followed in section 12.7(a) as well as in section 12.7(b).

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4. Section 12.7(b)(2)(i), concerning situations where the Commission does not possess approved data on indoor radon daughter concentration levels, provides that a structure other than a dwelling or schoolroom is eligible for an engineering assessment if it has "an external gamma radiation level of 0.15 mR/hr. above background <u>averaged</u> on a room-by-room basis." (Emphasis added.)

The wording of this proposed section is confusing. It does not indicate whether remedial action will be undertaken if the average radiation level of a particular room is unsafe or only if the radiation level of an entire structure as determined by the average levels of all the rooms is unsafe.

It is suggested that the relevant unit is the individual room because a person who works in a room containing dangerous levels of radiation will be affected by the condition of that room, irrespective of the conditions existing in other rooms of the structure. The logical validity of this approach is supported by the Commission's decision to

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consider each schoolroom separately in evaluating the need for remedial action in schools. (See section 12.7(a)(1) and (b)(1), entitled "For dwellings and school rooms.") Accordingly, section 12.7(b)(2)(i) should be revised to read as follows:

> An external gamma radiation level of 0.15 mR/hr. above background <u>in any particular room.</u> (Emphasis indicates new words.)

#### Suggested New Section 12.11

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The 1972 Appropriations Act for the Atomic Energy Commission states "that the need for and selection of appropriate remedial action to be undertaken shall be determined by the Commission upon . . . recommendation by and consultation with the State and others as deemed appropriate." (P.L. 92-314, Title II, section 202(b).)

Pursuant to this statute, the Commission should establish a community advisory commission to assist in the implementation of the remedial project. Such community participation would seem particularly advisable in determining the possible need for remedial action where the

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criteria in section 12.7 have not been satisfied (see section 12.8), in implementing the order of priority for execution of remedial action (see section 12.9), and in selecting the appropriate remedial action (see section 12.10). The Federal Government, the Commission and Colorado have already agreed to establish such a local advisory commission. (See Contract No. AT(05-1)-1621, Article VII.) Accordingly, a section should be added to the regulations already proposed, and that new section should read as follows:

> An advisory panel shall be established promptly after the effective date of these criteria to assist the Commission in implementing the remedial program. That panel shall include the county commissioner of public health; the chief building inspector of Grand Junction; a member of the Grand Junction school board; two members of the Grand Junction elected city government; two members of the community at large, one of whom is a member of the Mexican-American or some other significant minority community and the other of whom is scientifically trained in the dangers and effects of radiation contamination. The panel shall designate one of its members as chairperson and shall meet regularly. Adequate public notice shall be given of such meetings and they shall be open to the public.

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Suggested New Section 12.12

P.L. 92-314, Title II, section 202(d) provides that "the United States shall be held harmless against any claim arising out of the performance of any remedial action. . . ."

Since the Federal Government has determined that it should not be financially responsible for damage caused by inadequate or faulty repairs, the Government should accept a greater responsibility in preventing the occurrence of radiation related damage after the remedial action is taken. It is suggested that a new section be added to provide for the retesting of a structure a short time after the remedial action has been taken, particularly if the remedial action involves a technique other than removal of the radioactive mill tailings. That section should read:

> Not less than six months nor more than one year after completion of remedial repairs on a particular structure, that structure shall be retested for external gamma radiation levels and indoor radon daughter levels in excess of the Surgeon General's guidelines for suggested remedial action. If such tests reveal excessive radiation levels, the necessary repairs shall be made and the retesting process shall be repeated.

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The Federal Government, the Commission and Colorado have recognized the need for post-remedial evaluation to determine the effectiveness of remedial action taken to repair each particular structure. (See Contract No. AT(05-1)-1621, Appendix B, section X.) That recognition should be written into the regulations. INSTITUTE FOR PUBLIC INTEREST REPRESENTATION GEORGETOWN UNIVERSITY LAW CENTER 600 NEW JERSEY AVE., N. W. WASHINGTON, D. C. 20001

The Secretary

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U. S. Atomic Energy Commission Washington, D.C. 20545



DOCKET NUMBER PROPOSED RULE FR-12 Grand Tunction Remedial Criteria NUCLEAR ENERGY DIVISION

GENERAL ELECTRIC COMPANY, 175 CURTNER AVENUE, SAN JOSE, CALIFORNIA 95114 Phone (408) 297-3000, TWX NO. 910-338-0116

November 14, 1972

Secretary United States Atomic Energy Commission Washington, D.C. 20545

Dear Sir:

We have reviewed the proposed amendment of Title 10 Code of Rederal Regulations which was published in the <u>Federal Register</u> (37 FR 22391) on October 19, 1972, which would establish criteria in a new part 12 for limitation of the exposure of individuals in the area of Grand Junction, Colorado to radiation from certain mill tailings, and offer the following comment for the Commission's consideration:

We believe that the numerical value of 0.015 mR/hr for'bther structures" in paragraph 12.10(a) should be revised to read 0.15 mR/hr to conform with a similar value in paragraph 12.7 (b)(2)(i).

We appreciate the opportunity to comment on the proposed amendment and trust that the above information will contribute to more effective regulations.

Very truly yours,

A.N. Tschaeche Administrator-Licensing MC/273, Ext. 2235



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Acknowledged

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Mr. Paul C. Bender Secretary United States Atomic Energy Commission Washington, D.C. 20545

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Dear Mr. Bender:

This is in reference to the publication in the <u>Federal Register</u> of 10 CFR Part 12 concerning the Grand Junction remedial action criteria. The Environmental Protection Agency has participated with the State of Colorado and the AEC in the evaluation of the radiation emanating from uranium mill tailings which have been used for construction purposes for the past several years. Our interest in this remedial action program relates to our primary function of preserving the quality of the environment and assuring continued protection of public health.

The Office of Radiation Programs has reviewed 10 CFR Part 12 to assure that it provides adequate guidance for determining possible need for remedial action and, when implemented, will accomplish the desired objectives. With respect to paragraph 12.7 (b)(i)(b), we note that the procedures outlined have taken into consideration the recommendations developed by our technical staff which were based on an analysis of data collected from a study of dwellings in Grand Junction, Colorado.

We have no further comments to offer on this proposed amendment and believe that implementation of the remedial action program in accordance with the stated criteria is satisfactory.

Sincerely yours, a. D. Ane

W. D. Rowe Deputy Assistant Administrator for Radiation Programs



Acknowledged