

NRC Oversight of Nuclear Plant Effluent Discharges

March 28, 2022

Presentation to Pilgrim NDCAP

11555

UNITED STATES
NUCLEAR REGULATORY
COMMISSION

WWW.NRC.GOV

The background image shows two workers in an industrial setting. They are wearing white hard hats; the one on the right has 'USNRC' printed on it. They are also wearing safety glasses and high-visibility vests. The worker on the left is wearing an orange shirt with 'P2R21' on it and is looking down at a clipboard. The worker on the right is wearing a maroon shirt and is also looking at the clipboard. The overall scene is dimly lit, with the workers' faces and gear highlighted by a soft light.

NRC Oversight Highlights

- All effluent releases – whether liquid or gaseous – must meet conservatively set federal limits.
- The NRC conducts inspections to verify that any discharges abide by these requirements.
- Plant owners must document effluent releases in annual reports submitted to the NRC.

Discharge Requirements

Controlled Releases must meet both NRC and EPA regulations



§ 20.1301 Dose limits for individual members of the public.

(a) Each licensee shall conduct operations so that—

(1) The total effective dose equivalent to individual members of the public from the licensed operation does not exceed 0.1 rem (1 mSv) in a year, exclusive of the dose contributions from background radiation, from any administration the individual has received, from exposure to individuals administered radioactive material and released under § 35.75, from voluntary participation in medical research programs, and from the licensee's disposal of radioactive material into sanitary sewerage in accordance with § 20.2003, and

(2) The dose in any unrestricted area from external sources, exclusive of the dose contributions from patients administered radioactive material and released in accordance with § 35.75, does not exceed 0.002 rem (0.02 millisievert) in any one hour.

(b) If the licensee permits members of the public to have access to controlled areas, the limits for members of the public continue to apply to those individuals.

(c) Notwithstanding paragraph (a)(1) of this section, a licensee may permit visitors to an individual who cannot be released, under § 35.75, to receive a radiation dose greater than 0.1 rem (1 mSv) if—

(1) The radiation dose received does not exceed 0.5 rem (5 mSv); and

(2) The authorized user, as defined in 10 CFR Part 35, has determined before the visit that it is appropriate.

(d) A licensee or license applicant may apply for prior NRC authorization to operate up to an annual dose limit for an individual member of the public of 0.5 rem (5 mSv). The licensee or license applicant shall include the following information in this application:

(1) Demonstration of the need for and the expected duration of operations in excess of the limit in paragraph (a) of this section;

(2) The licensee's program to assess and control dose within the 0.5 rem (5 mSv) annual limit; and

(3) The procedures to be followed to maintain the dose as low as is reasonably achievable.

(e) In addition to the requirements of this part, a licensee subject to the provisions of EPA's generally applicable environmental radiation standards in 40 CFR part 190 shall comply with those standards.

(f) The Commission may impose additional restrictions on radiation levels in unrestricted areas and on the total quantity of radionuclides that a licensee may release in effluents in order to restrict the collective dose.

PART 190 - ENVIRONMENTAL RADIATION PROTECTION STANDARDS FOR NUCLEAR POWER OPERATIONS

Authority: Atomic Energy Act of 1954, as amended; Reorganization Plan No. 3, of 1970.

Source: 42 FR 2860, Jan. 13, 1977, unless otherwise noted.

Subpart A - General Provisions

§ 190.01 Applicability.

The provisions of this part apply to radiation doses received by members of the public in the general environment and to radioactive materials introduced into the general environment as the result of operations which are part of a nuclear fuel cycle.

PILGRIM NUCLEAR POWER STATION

Facility Operating License DPR-35

Annual Radioactive Effluent Release Report

January 1 through December 31, 2020



PILGRIM NUCLEAR POWER STATION

Facility Operating License DPR-35

Annual Radiological Environmental Operating Report

January 1 through December 31, 2019



Documenting Releases

A photograph of a person's arm wearing a blue nitrile glove, holding a large, vibrant green leafy plant, possibly a type of lettuce or spinach. The background is a blurred field of similar plants under bright sunlight. A semi-transparent black rectangular box is overlaid on the lower right portion of the image, containing the text "Measuring Release Impacts" in white.

Measuring Release Impacts



NRC Inspection Activities

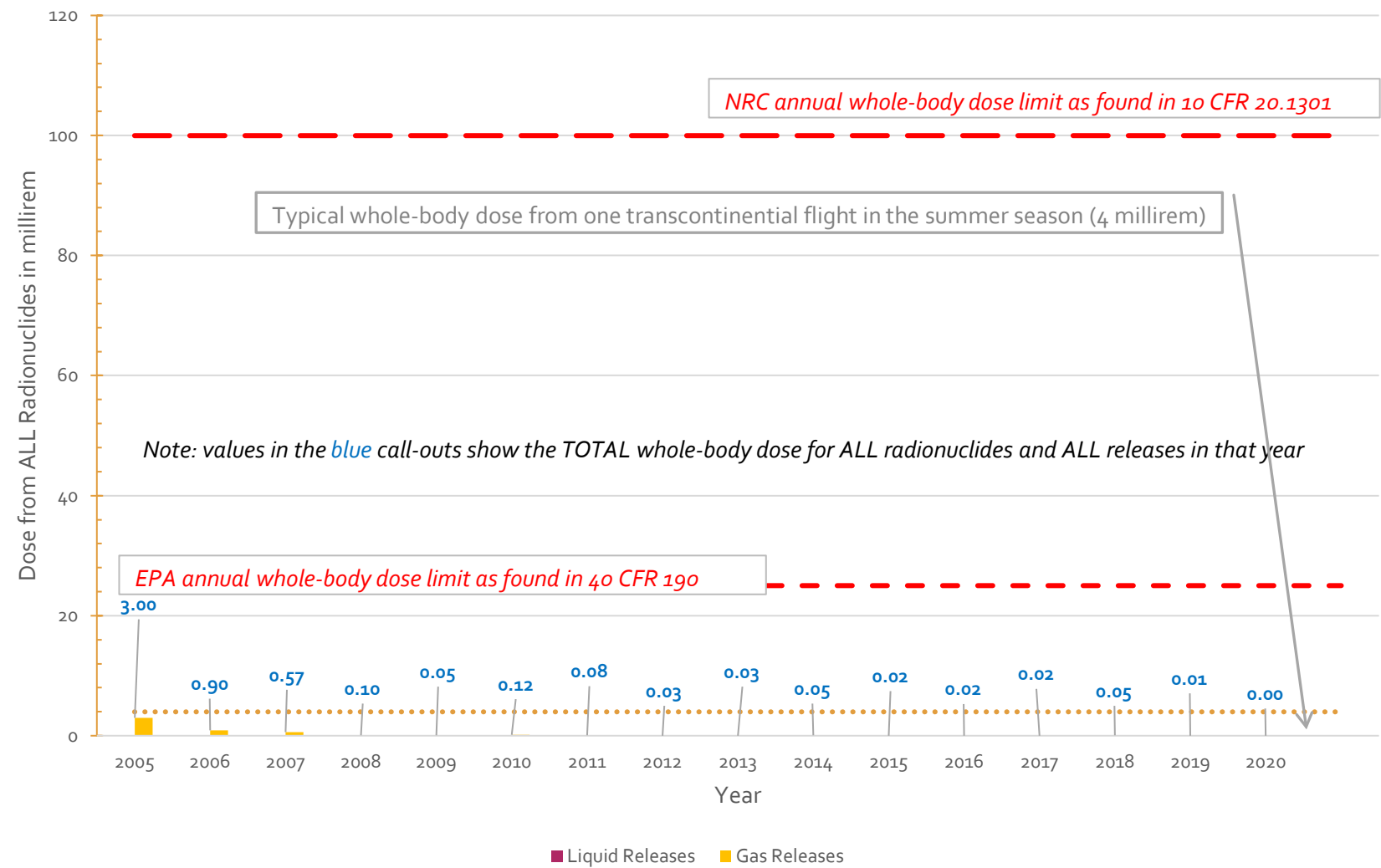


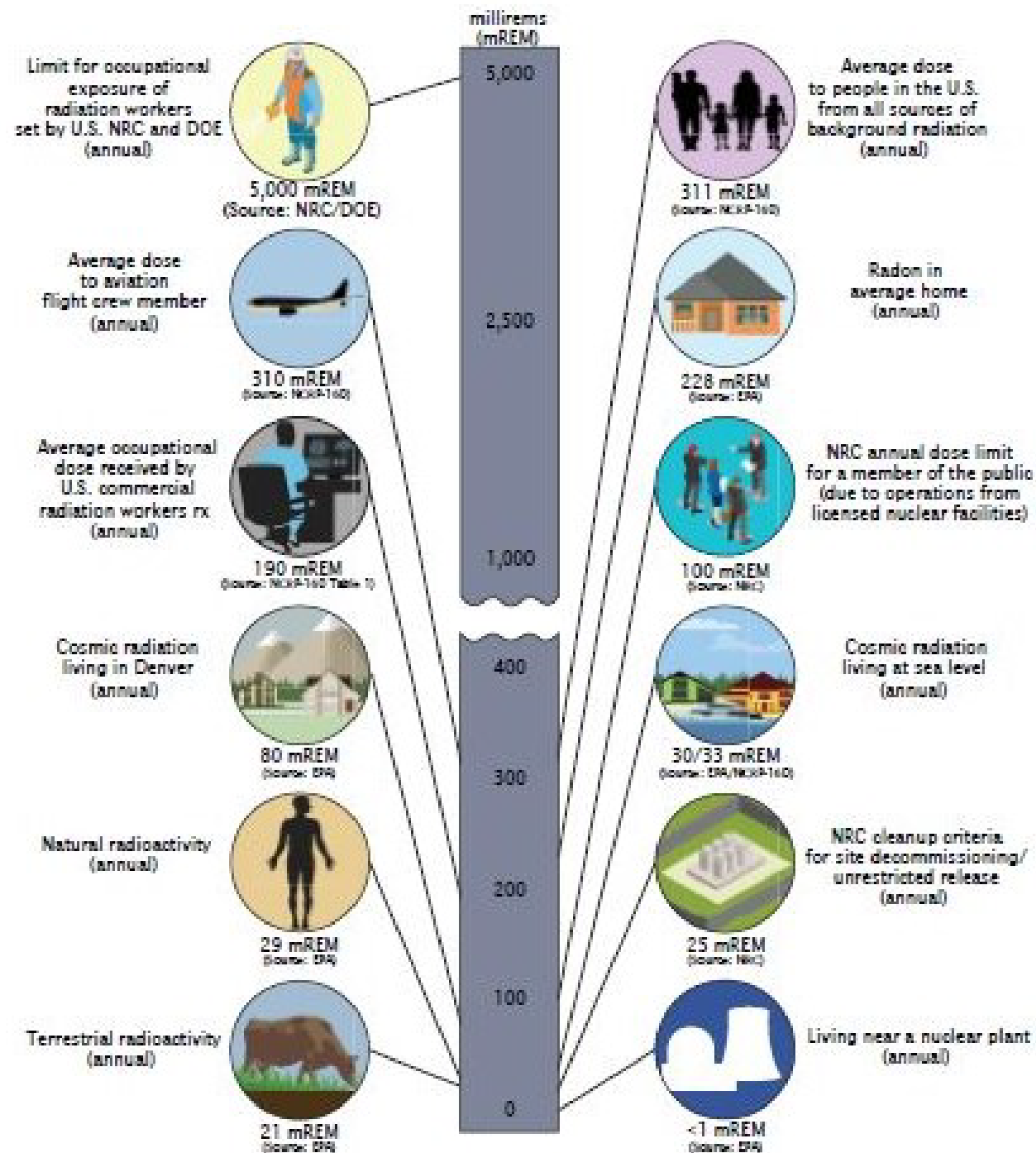
NRC Inspection Activities (cont'd.)

Number of Liquid Releases & Volume - Pilgrim Station



Comparison of Liquid and Gas Releases to Limits - Pilgrim



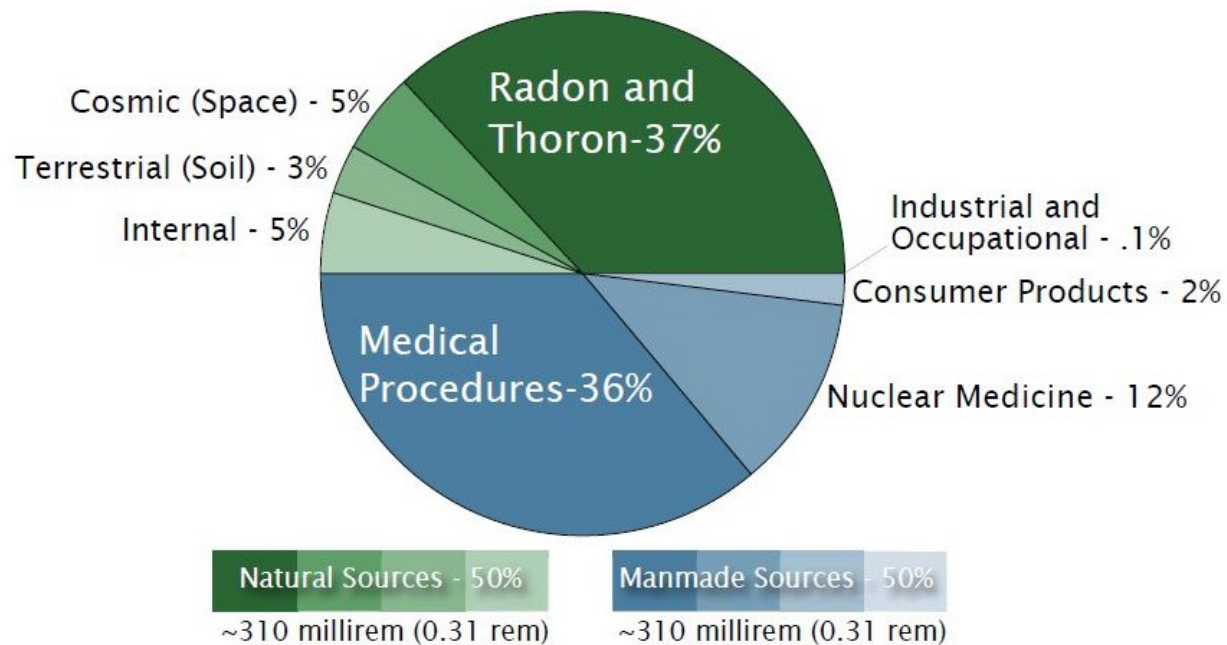


Radiation Doses

Radiation Doses (cont'd.)

Sources of Radiation Exposure in the U.S.

National Council on Radiation Protection and Measurements (NCRP), Report no. 160







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