OH 506-1

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

JUN 24 1980

DOCKET NUMBER
PROPOSED RULE PR-20 (42)
(45 FR 20493)

ATTENTION: Docketing and Service Branch

SUBJECT: Comments on Certification of Personnel Dosimetry Processors

Dear Sir:

I would like to offer the following conclusions with reference to your Advance Notice of Rulemaking, Federal Register, March 28, 1980:

I. The imposition of a mandatory testing program will have several adverse consequences:

   A. The program will be a large expense to U. S. taxpayers and consumers for limited benefit.

   B. Overemphasis on testing may result in a separate effort dedicated to passing the test.

   C. The conscientious effort by most processors toward continuing improvement of their state-of-the-art will be slowed or ended.

II. No testing program alone can be reasonably expected to assure that a dosimetry service is an excellent one.

III. Any requirement for processors should begin with a committee of <u>experienced</u> experts:

   A. The committee must physically inspect the processor under three conditions:

      (1) Periodic inspection, e.g. every two to four years.
      (2) Change in dosimeter or process.
      (3) Apparent failure of any testing program.

   B. Testing program participation should be voluntary or in-house unless requested by the committee to physically observe any suspect process.

   C. An appeal process, such as by a peer review committee, would be required in case the certification committee denies certification.

   D. Testing results should not be published with processors identifiable since some reasons for apparent failure, such as transit storage near radiopharmaceuticals may never be identified.

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IV. The purposes of dosimetry services should not be further separated from a comprehensive safety program.

The reasons for the above conclusions are explained in the following paragraphs.

There are several concerns that need to be expressed about ongoing developments in radiation dosimetry activities and especially the apparent emphasis on a testing program. The concerns should be prefaced with the statement that radiation exposure can and is monitored better than any other potentially hazardous agent. It also appears that measurable levels are further below the proven hazardous levels than can be obtained for similar dosimetry of other agents. Thus, the need for a testing program to "improve" dosimetry practice should be seriously questioned. Furthermore, public statements by NRC officials and the University of Michigan, UM, people who performed the pilot study of the dosimeter testing program have shown the results of the program in the worst possible light. This pilot study was designed to test the proposed standard, not the processors. UM investigators emphasize that a large fraction of the processors failed the test, but, when pressed, these investigators admit that 85 to 90% of all dosimeters would have passed the current standard. The testing program enhanced the opportunity for failure due to clerical errors since the processor's normal report was not always in the required format and was then copied and reinterpreted. In good radiation safety programs the health physicist would challenge incorrectly reported important exposures, either high or low, so those errors would also not be representative of real dosimetry practice. Some processors who have never seen an accidental exposure failed the accidental exposure levels. Such failures, though serious, are easily corrected and do not indicate the average worker was monitored poorly. Other failures occurred because some processors use a more conservative beta calibration source than that of the standard. The other beta source may also be thought to be closer to the monitored field exposures. When all these abnormal causes of failures are considered, one can only conclude that radiation dosimetry is in relatively good shape.

Although dosimeters look deceptively simple, the dosimetry system is complex and can be affected by many outside agents in actual practice as opposed to under laboratory conditions. For example, transit storage near radiopharmaceuticals or a testing laboratory error such as leaving a dosimeter near a radiation source could easily lead to failure of a testing program. We should then examine the possible adverse conseqences of intitiation of a testing program.

With excessive emphasis, testing will become an end in itself. A mandatory testing program will likely result in a processor effort dedicated to passing the test separate from the program for routine processing. Past efforts to improve dosimetry practice will slow or cease since certified processors are already satisfactory by definition. Although new systems may be thoroughly tested in the laboratory, most large systems of any kind will develop minor problems when reduced to large-scale practice. In dosimetry these problems

could easily lead to temporary failure (since one bad result can cause failure) and few processors would risk even temporary loss of certification. This is especially true because such improvements are very expensive even without the added risk of failure. These two effects, separate processing and impaired future development are definite potential negative benefits from a mandatory testing program.

The cost of the testing laboratory, certification and appeals committees and the sizeable effort by each processor are a large expense that must ultimately be paid by the U. S. taxpayers and consumers. Is this a worthwhile expense for the above negative benefits when dosimetry programs are already in better shape than any other hazard monitoring system?

Any requirement intended to improve dosimetry performance must begin with a committee of experienced experts. The committee should physically inspect the processor under three conditions: (1) periodic inspection, e.g. every two to four years, (2) change in dosimeter or process, (3) apparent failure of any testing program. Testing programs are tools to assist the committee in their inspection. In-house testing could be an advantage as the committee could require and physically observe the testing of any suspect process. Voluntary participation in a testing laboratory program or intercomparison program would reduce the adverse effects discussed above, assist in dosimeter development testing, and give the committee most of the required preliminary information to start their evaluation of a processor's program. Certification status should be published after a suitable appeal process, but testing results with processors identifiable should not be published. The dosimeters tested are potentially exposed to many adverse factors without the knowledge or control of the processor in a testing laboratory mail-in program. Since failure of a good process due to an unknown adverse factor will be infrequent and random, the published test result could have severe and unwarranted impact on the processor.

In the NRC Federal Register notice reference is made to using radiation records for epidemiological studies. This type of incidental purpose must not be allowed to further separate dosimetry efforts from the main purpose as part of a comprehensive safety program. Furthermore, past monitoring of more significant exposures to other hazardous agents has been ignored or poorly done. Many of the exposures to other agents such as chemical reagents, solvents, lubricants, etc. have occurred with radiation and can lead to erroneous epidemiological conclusions.

Since radiation risk is less than other risks, we should not expand expenditures in radiation safety at this time. A growing irrationality is strongly reflected in such efforts as obtaining zero risk from a single factor such as radiation or zero errors in a large, expensive dosimetry testing program. While both objectives

are worthwhile, they are unrealistic and will divert effort from other safety needs that could be substantially more beneficial to mankind at the same or less cost. Although it is somewhat against my self-interest as a professional working in this field, I feel the continuing expansion of radiation safety expenditures with diminishing or negative return should be halted until other risks are reduced to a comparable level to radiation.

I hope that you will give the above thoughts and suggestions serious consideration because it appears you are about to commit U. S. taxpayers and consumers to a large and continuing expense for little or negative benefit.

Sincerely,

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