Comments on draft NCRP document SC85, "Evaluation of Occupational and Environmental Radon Risk"

1. The document is poorly organized. For example, there are extensive discussions of radon studies involving units used in radon work, such as WL and WLM, as well as discussions on radon daughter products and their relative importance, etc., before these topics are presented in detail and explained more than half-way through the document. Even when these are discussed, the presentations are in many places sketchy and inadequate to provide an understanding of the subject being discussed.

2. There are very lengthy presentations of historical conditions in mines, which cover pages 39-147, and then other discussions of epidemiological studies, pages 189-309. It is not clear why these are presented in such great detail, amounting to nearly half the document. The information to be extracted from all of these studies is also not well discussed.

3. The discussion of the dosimetry of radon is sketchy and uneven, with some aspects discussed in fair detail and others hardly adequately. The discussion of detection is poor and sketchy.

4. The document appears outdated, because there is no mention in it of two very important recent developments in this field, namely the ICRP Lung Model, which has been used in recent radon dosimetry, and the BEIR VI report, which contains a comprehensive review of the current state of the subject, including a comprehensive review and interpretation of the epidemiological data and the current understanding of the biological effects of radon.

5. The graphs presented in the document are confusing and not labeled well, especially in the beginning of the document.

6. The document needs editorial review to correct typographical errors and to improve its organization.

Suggestions to improve the quality of the doucment:

1. Include a discussion of BEIR VI, and describe why it is necessary to publish this report only 3 years after BEIR VI was published. The state of the art likely has not changed much in that period, and there should be some justification for this publication. If there are differences with BEIR, they should be clearly discussed.

2. Incorporate the new ICRP Lung Model (ICRP-66) in the calculations or, if it is not used, then it should be clearly indicated why it was not, especially since this is the most recent model and the one generally used in this type of work.

3. Improve the organization of the report. Place topics that are needed to understand subsequent topics first. For example, the discussion of units, such as working level, as well as the physics and dosimetry of radon, should be placed at the beginning of the report, before using these quantities and concepts in discussions of epidemiology and other studies.

4. Provide more information in the basic science areas, such as units and physics, or remove these sections. For example, the sections on the physics of radon, detection of radon, dosimetry of radon, and dosimetry units are very broad-brush types of discussion that would be of no use to readers who are not familiar with these topics, and of no use to readers who already know them.

5. Improve the discussions of the conclusions extracted from the various studies and other science on the biological effects of radon. Although these are presented in the report, they are somewhat scattered and do not stand out.