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To the NWMO scientific staff

While looking for a particular report on your web site I came across the document posted there, written by Dr. D.R. Cullimore. Since I have been involved in the area of microbial effects on deep disposal concepts for 19 years, I decided to read this document.

I would like to note two points:

While I concur with many points in Dr. Cullimore's document, I find the document nevertheless rather dated. In the first part of Dr. Cullimore's document, the distinct impression is created that little or no attention has been paid to microbial effects in geological disposal environments. Such an impression may have been partially true in the early 1980's, but since about 1985, microbial effects have certainly been a consideration in the development of concepts. For instance, I find it rather disappointing that Dr. Cullimore does not quote any of Dr. Julia M. West's work from that time, she pioneered a lot of work (Dr. West is at BGS, Keyworth, Nottingham, UK). Also, Dr. Cullimore was a member of the SRG, visiting AECL on several occasions and I recall a number of personal discussions with him. While it is true that the work at AECL on the deep disposal concept initially did not include an significant microbial work, that changed in 1989, even before Dr. Cullimore pointed this need out to aECL in the early 1990's. Since that time, much discussion has taken place and much work has been carried out on potential microbial effects in a disposal environment, both internationally and in Canada (mainly at AECL). I was (and am) responsible for a considerable part of this work and find it rather disappointing that Dr. Cullimore does not refer to any of the publications that can be found in the open literature. I feel that it is a disservice to the public that may be browsing the NWMO office to not have been made aware of the growing attention paid to microbial effects. Also, there was a workshop held with the SRG in Toronto specifically on this issue in 1995. Dr. Cullimore was part of that workshop, but does not mention it.

A second point is, that, although there is a NWMO disclaimer on Dr. Cullimore's report, it is my opinion that NWMO should have checked this report for scientific appropriateness similar to the scrutiny that any other published document is usually subjected to. For instance, there are several important statements in this report unsupported by references; some references are mentioned in the text but missing in the reference list at the end of the document; and there are many references in the reference list that are not quoted at all in the text. One case in point is that there are two references in the list (Davis 1991) and LaRock and Cunningham (1995) that deal with helictite formation in caves. Nowhere in Dr. Cullimore's document is this discussed as far as I can see, and the references are not mentioned in the text. I am wondering how the

formation of helictites is influenced by microbes, and the bearing of this process on a deep geological disposal concept.

I would suggest to the NWMO that posted background papers should at least be checked as regular scientific publications are. It gives the document more credibility.

While I understand that Dr. Cullimore's report is intended to draw attention to the potential effects of microbiological activity on disposal concepts, it is my opinion that some attention should have been paid to the work going on nationally and internationally on this subject. The impression of the posted document is that the issue of microbial effects has been largely ignored which is not the case.

Respectfully submitted by

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