

NOTES AND COMMENTS

SPECIAL REPORT FROM THE GLASGOW INTERCOMPARISON WORKSHOP ON QUALITY CONTROL AND ASSURANCE

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The results of the Glasgow Intercomparison Project and discussions about ways to increase a laboratory's quality as well as an archaeologist's confidence led to a general agreement at the Workshop about the outline of a procedure for Quality Control and Assurance. The scheme is primarily based on proposals presented by Dr Austin Long, University of Arizona, Dr Roberto Gonfiantini of the International Atomic Energy Agency and our Glasgow hosts. It consists of three elements:

I. Quality Control/Assurance Protocol

This QC/QA protocol of internal laboratory procedures serves to alert laboratory personnel to existing problems (QC) and equally to convince outsiders/customers of the quality of the laboratory's data (QA).

Details about the recommended protocol follow this report. Each laboratory director may wish to adjust the procedures to his/her particular circumstances and to certain national rules or requirements.

An essential part of the QC/QA program is the analysis at regular intervals of certain standards. For these we have decided to choose:

II. IAEA Reference Materials

Presently, a set of ^{14}C reference materials is being prepared which consists of different types of material and different ages, but including modern cellulose, charcoal of a few thousand BP, wood of 11,000 BP and possibly 25,000 BP, travertine of 40% ^{14}C and background marble. Distribution of these materials will start in February 1990 to those laboratories who have applied to the IAEA. The deadline for submitting results is July 1, 1990. All data will be sent under name (*not anonymous*) to those laboratories which submitted results. During Fall 1990, all the results will be discussed in Vienna at the IAEA headquarters by everyone who wishes to attend. A few specialists will be invited. This meeting will result in a report stating the consensus ages obtained. Laboratories who wish to stay anonymous may order samples and should *not* send in their results but rather wait till the final report is published.

Naturally the quantity of reference material stored at the IAEA is large, but not unlimited. Laboratories may obtain sufficient material of certain standards to check their counter monthly. However, if laboratories with several counters in operation were to run a standard in each counter monthly or bimonthly (as the QC/QA protocol requires) the supply of reference material at the IAEA would become exhausted in a few years' time. These laboratories, therefore, have to choose their own laboratory standards which should have to be compared to international standards regularly.

III. International Intercomparison

The recent intercomparison study has highlighted some difficulties within the ^{14}C community relating to the comparability of results from different laboratories. As a result of these findings and as part of the proposals for Quality Assurance, regular intercomparisons will be organized by the Glasgow group. An important feature of the comparisons will be the use of natural sample materials, the results of which will not be known in advance.

The first such intercomparison is planned to begin in 1991, with sufficient time allowed for the IAEA reference samples to have been widely assayed within the ^{14}C community.

The new intercomparison will take place over a shorter time period, typically one year for the experimental work, and will involve a smaller number of samples, the majority of

which will require full laboratory processing. At present, we envisage that each laboratory will receive a minimum number of samples, which can be supplemented by additional samples on request. Sample materials will, eg, include wood, grain, shell, peat, marine sediment and possibly bone.

A report on the results would be available to the participating laboratories within three months of completion of the experimental phase and will be discussed at the then next International Radiocarbon Conference.

A key component of the entire operation would be the "help" offered to participating laboratories and it would be hoped that participants would seek advice from relevant experts concerning any difficulties identified.