

DR 16/695
 Capt. F.B. Lloyd,
 D.A.W. Trials,
 M.O.S.,
 St. Giles Court,
 LONDON.

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Disposal of Radio-active Waste at Maralinga.

In due course there will be no doubt a radio-active waste disposal scheme operated in connection with Australian power producing reactors and it might be considered that disposal of waste from Maralinga should also come into such a scheme.

The Maralinga radio-active waste should be stored then in such a manner that it can be properly accounted for, recovered, and removed for disposal elsewhere.

The requirements to be satisfied in storage conditions are:-

1. Accessibility,
2. Sealed containers.
3. Shielding against penetrating radiation such that the radiation levels in the immediate vicinity of the store does not exceed the maximum permissible for occupational workers.
4. Security control over the store area practicable.
5. Adequate spacing between store area and any other area where low level radiation measurements are likely to be carried out.

The forward area is unsuitable because a store in this area might become relatively inaccessible as a result of fall-out from weapons firings and because adequate security control of entry might not always be practicable.

The R.B. area where there is already a pit provided for waste is a possibility, but the airfield decontamination area appears more attractive since it is more remote from laboratory areas.

If, however, the Australian authorities consider that the waste should stay for ever at Maralinga and if the forward area will remain a prohibited area for many years after trials cease, burial of what will after all be a relatively small quantity of active material in the forward area will not be unreasonable, so long as it is well and truly buried in such a way that there will be nothing visible by way of mounds or inscribed "tombstones" to arouse the curiosity of aboriginals or others who might stray into the area. If markers are considered necessary they should not be recognisable as such to the uninitiated, nor should there be a wired enclosure which would attract attention especially if there were also a lot of marker pegs in the ground within it.

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The minimum combined shielding effect of earth coverage and thickness of container of waste should be adequate to reduce the above-surface radiation intensity to a level which will not interfere with fall-out following weapon trials.

(Sgd.) J.A.T. DAWSON
Senior Supt. Health Physics Division.

Building A2.2,
Atomic Weapons Research Establishment,
Aldermaston, Berks.

29th August, 1958.

1. Minutes of the meeting of the Committee on 28th August 1958.

(a) The Secretary reported that a report had been received from Dr. Webster for the continued accumulation of data to the I.G.P. programme after the official year was completed. The programme would become known as the International Geophysical Co-operation, 1958. A copy of the report is enclosed as Appendix 1.

The Committee agreed that copies of its reports could be published as soon as possible. The Secretary will inform Dr. Webster that material will continue to be made available from time to time.

(b) The Secretary reported that a copy of the report of the International Geophysical Co-operation, 1958, had been received from Dr. Webster. The report is enclosed as Appendix 2.

(c) The Secretary discussed the present position of the Committee's sampling programme in detail. All results for May and September 1957 are contained in the Report of 18th April and the first readings for April, 1958, are also included. The first readings for August 1958 are complete and the collection of powdered milk has been continued for March and August, 1958. The human body collection for 1958 is under completion. Most of the samples have already been dispatched to A.H.R.C., and the analysis of some of the data is complete.

(d) A first inspection of the preliminary results indicated that the data for the first two months of the year 1958 are complete and the Secretary will inform Dr. Webster that material will continue to be made available from time to time.

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UNITED KINGDOM ATOMIC ENERGY AUTHORITY

Building A2.2,
Atomic Weapons Res. Estab.,
Aldermaston,
Berkshire.

6th August, 1958

Dear Moroney,

I enclose a copy of a letter received from Dr. Bryant regarding your increased sampling programme. I shall be glad if you will let me have your reaction - how strongly do you wish to press your requirement and what parts you would be willing to drop.

Enclosed also are the first results from the human bones.

Yours sincerely,

(sgd) J.A.T. Dawson
Senior Supt. Health Physics Div.

Mr. J. B. Moroney,
Box 22880,
G.P.O.,
Melbourne,
Australia.

HUMAN BONE RESULTS

Assuming all the activity counted is due to strontium 90 (→yttrium 90) the results are as follows :-

<u>YOUR ref.</u>	<u>OUR ref.</u>	<u>B.U. ⁹⁰ Sr</u>
AHV 58/1	W/HB 1	0.30 ± 0.01
AHSA 58/1	W/HB 2	0.06 ± 0.005
CHSA 1/1	W/HB 3	0.30 ± 0.01
IHWA 2/1	W/HB 4	1.30 ± 0.03
IHSA 3/1	W/HB 5	1.7 ± 0.2
IHSA 3/2	W/HB 6	0.55 ± 0.15
IHSA 3/3	W/HB 7	0.35 ± 0.05
IHQ1/1	W/HB 8	0.80 ± 0.07
IHQ1/2	W/HB/9	0.65 ± 0.05

The limits quoted represent only the uncertainty (2σ) on the number of counts recorded.

In the absence of information on the strontium 89 contents of the samples, these results must at present be regarded as upper limits and the true strontium 90 contents may be significantly lower.

Only two samples (CHSA 1/1 and IHWA 2/1) contain sufficient activity to make it worth attempting to separate and count the yttrium 90 and this will be done.

The strontium sources from the other samples gave one count or less per minute and to obtain estimates of the strontium 90 content we shall have to recount after sufficient time has elapsed for any strontium 89 to have decayed significantly.

In the case of the adult bones, AHV 58/1 is higher than we expected and we are repeating the determination and will check the decay of the sources. The result for AHSA 58/1 is as expected and I suggest that a value of, say, less than 0.1 could be accepted without any further work.

F. J. Bryant

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(Research Group)
Woolwich Outstation,
Building C.37,
Royal Arsenal,
Woolwich, S.E. 11

Reference W3/2

25th July, 1958

Dr. J.A.T. Dawson,
S.S.H.P.,
Building A2.2,
A.W.R.E.,
Aldermaston, Berks.

Dear Dr. Dawson,

Including the first batch of human bones (9) and the recent milks (5) we have had 78 samples from you in the past year as against the 80 per annum agreed in May, 1957. I note, however, in the copy of the letter dated 18.4.58 from Mr. J.R. Moroney which you sent us that "the human bone survey has become rather more ambitious than originally intended" and that he anticipates a total of 70 samples for analysis.

I think I ought to let you know that our commitments are such that we shall be unable to deal with more than the agreed number of samples for you, i.e. 80 per annum. If the human bone programme goes through as planned, the effort available for other types of samples will be correspondingly less and much less than in the past twelve months.

If you have any comments on my letter of 9th July, I should be glad to receive them.

Yours sincerely,

(signed) F.J. Bryant

Professor E.N. Titterton,
Research School of Physical Sciences,
The Australian National University,
Copy to - R.J. Stevens,
O.X.R.L.

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Copy No. 1 of 4 copies

Building A2.2, 82

Atomic Weapons Research Establishm
Aldermaston
Berkshire.

3rd September, 1958

Dear Ernest,

I think you know that Charles Adams is leaving us to go to the Central Electricity Generating Board at the end of this month. Consequently he is shedding his loads and has asked me to reply to your letter of August 28th.

There seems to have been some misunderstanding regarding DC 12. It was certainly not our intention to keep you or Don Stevens in the dark regarding the operations therein. At Antler time I told Turner what was going on and asked him to regard it as classified information and he seems to have interpreted this as meaning that he should tell no one else at all.

The purpose of DC 12 is simply to extract Th B from Th²²⁸ for use as short-lived sources of gamma radiation in conjunction with Minor Trials at Maralinga. There was an accidental release of Th²²⁸ within the hot box in DC 12 with the result that some Th²²⁸ was swept out into an extract filter between the hot-box and the chimney. Building and external contamination have been very small.

As regards disposal of waste active material, I have written to Frankie Lloyd my views on the various possibilities and he will be transmitting these (or his variant of them) through Wheeler. I have said that the choice between burial in the forward area and near to the village should be left to you, but that if the former site is chosen the fact that burial has taken place there should be disguised in order to avoid attracting the attention of aboriginals or others straying into the area. If on the other hand you favour (as I now know you do and as I do too) the airstrip area I would rather see a number of small holes in the ground than one large pit, since this will make for safer burial and subsequent exhumation if ever re-disposal elsewhere is required.

Yours sincerely,

Jack.

(J.A.T. DAWSON)

Professor E.W. Titterton,
Research School of Physical Sciences,
The Australian National University.

Copy to † D.J. Stevens,
C.X.R.L.

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