UNIVERSITY OF CALIFORNIA
LOS ALAMOS, NEW MEXICO 87544

OFFICE MEMORANDUM

TO : LaMar J. Johnson, Group Leader H-8 DATE: January 2, 1974

FROM : Kenneth E. Apt, H-8

SUBJECT : AIR SAMPLING NETWORK AND TLD NETWORK MODIFICATIONS FOR CY74

SYMBOL : H8-73-314

The beginning of CY74 is an appropriate time to implement several changes in our Air Net and TLD surveillance systems. For the Air Net, the topics in question are the number and distribution of sampling stations as well as the duration of sampling and collection frequency. Currently we have 33 stations within LASL and its immediate environs and 3 off-site stations in the Rio Grande depression. The number of local stations can be reduced to about 23 without significant effect on the quality of the Air Net data. The reduction is intended to eliminate sampling redundancies and to delete some stations that are not influenced by normal Laboratory operations. The distribution of the proposed 23 local stations is similar to the existing network and is given in Table I and Figure 1. A main difference of the proposed network is that the 4 Guaje-Rendija Canyon stations have been eliminated because of (a) the background nature of their data, (b) their distance from emission sources and population, and (c) their sampling redundancy. The data obtained from these stations does not justify the time and expense invested in their operation.

Further changes in the Air Net include the deletion of the semicircular array of 6 stations which cover an arc from TA-6 to TA-36. Several of these stations are handicapped by frequent inaccessibility and none of them provide data for Laboratory boundary concentrations which seem to be more pertinent. In lieu of the 6 stations, 3 newly located sampling stations along the southwest laboratory perimeter will be implemented and will provide "fence-line" data more compatible with the meteorology and demography of the area. The town site sampling stations remain essentially unchanged and relatively dense as the demography would prescribe. The 3 stations at Santa Fe, Pojoaque and Espanola will remain in service. In addition, it is hoped that a permanent off-site station at Camp May can be established. Such a station would provide useful background data for a location other than the Rio Grande depression.

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Currently, the Air Net samplers are collected on a weekly schedule. The possibility of bi-weekly collection is being considered. Questions of filter loading, sampler saturation, maintainance scheduling, etc., will indicate the appropriateness of a bi-weekly collection schedule. Should we decide to have bi-weekly collection, it could be initiated at any time during early CY74 as the previously collected CY74 data could be compiled on a 2 weekly basis.

The memo of 19 July 1973 (H8M-73-138) discussed the modified air sampling network for Am and radioiodine. As described, air samples from 12 LASL area stations and the Santa Fe station were to be analyzed for Am and radioiodine. The revised Air Net for CY74 shall have a similar modified air monitoring system for Am and radioiodine of 10 local stations and Santa Fe. The locations of these stations is given in Figure 1 and Table I.

Attempts were made to determine an Air Net sampling array via known analytical techniques (e.g. D.A. Waite, report no. BNWL-SA-4534). However, the unique meteorology, topography and demography of LASL and its environs make these techniques particularly inapplicable to our sampling network. Hence, previous experience and intuitive judgement were drawn on in our revisions. It should be noted that for normal laboratory emissions which are distributed in time and space the revised Air Net serves as an effective monitoring system. For major unanticipated releases requiring more contiguous sampling, the Air Net can be augmented as needed by a number of portable air sampling trailers which will be kept in readiness.

The Air Net changes are aimed at increasing efficiency and saving time and money without compromising effectiveness. The reduced number of stations will produce a more managable amount of data, and less time will be devoted to sample preparation and analysis. Sample collection and station maintainance will require 1 day per week rather than the present 1.5 day. (This time could go down to about 2.5 days per month if the bi-weekly collection schedule can be implemented). Also, the reduced number of stations will make it more feasible to continue upgrading the entire air sampling system (e.g., complete changeover to the new 10 CFM, oil-less, maintainance free, rotary vane type pumps of which five have been ordered).

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Examination of the TLD penetrating-radiation network indicates that there is redundancy in that system; over 60 stations are being reported. The number of locations can be brought down to about 45, and with certain changes can give more useful information than we presently obtain. The 26 proposed Air Net stations shall have TLD monitors and an additional 4 to 6 monitors each shall be placed around LAMPF, Pajarito site, Van de Graaff facility and OWR. The duration of exposures at these locations has not been formalized but will probably include both monthly and quarterly exposures. It would be useful to have some locations with both monthly and quarterly (or longer) exposures to determine possible problems of TLD "fading". Details of the TLD network changes are forthcoming.

KEA/jc

TABLE I : MODIFIED AIR SAMPLING NETWORK

Station Number	Location	Station Number	Location
1	Barranca School	14*	TA-6
2*	Cumbres J.H.S.	15*	S-Site
3	Golf Course	16*	TA-49
4	Arkansas Avenue F.S.	17	Bandelier Lookout
5*	Diamond Drive	18	TA-33
6	48th Street	19	Pajarito Acres
7	Fuller Lodge	20*	White Rock STP
8	Acorn Street	21	Booster P-1
9	DPW STP	22*	Booster P-2
10*	Los Alamos Airport	23	Beta Site
11*	Bayo Canyon STP	24	Española
12	Well PM-1	25	Pojoaque
13*	LAMPF	26*	Santa Fe

* only these stations have routine Am and radioiodine analyses performed.