

The decision to return the BIKINIANS to their homes is based in part on the consideration of radiation exposures of those who will reside in homes on the islands of Bikini and Eneu and who will consume locally produced foods. The health of the people was the primary consideration. Several simple measures have been recommended which are expected to insure that exposures of Bikini residents remain within acceptable levels.

In addition to insuring that radiation exposures are at acceptable levels, there are other considerations. People along with some quantities of goods, household possessions, and food will come to the Atoll. At least two important materials will go from the Atoll, e. g., scrap metal and copra. Any radioactivity associated with metal scrap would appear not to be a problem if this scrap is monitored before shipment from the Atoll. Although sale of scrap metal will be an important source of income for the returning population, ~~copra is the money crop and the~~ chief source of income.

The Trust Territory agriculturist estimates that with the replanting now under way, the Bikinians can produce as much copra in a month as they once produced in a whole year. This earlier annual production has been reported to be about 80,000 pounds or 40 tons. Future production

BEST COPY AVAILABLE

may then be about 480 tons per year. If the copra produced through the agricultural rehabilitation program contains as much  $^{137}\text{Cs}$  as in the 1967 and 1969 samples, i.e., 114 to 120 pCi/gm, and considering that in producing copra, coconut meat is reduced in weight by the sun drying process by as much as 50%, the copra may contain up to 240 pCi/gm. The fertilizing of the new plants which is being done in the agricultural rehabilitation program may reduce the  $^{137}\text{Cs}$  levels in the copra.

The relationship between  $^{137}\text{Cs}$  in coconut meat and in soil where coconut trees are growing is not known. Available soil samples have come from one place and coconuts from another on Bikini. It would be desirable to have samples of coconut and soil from the same place and to fertilize an existing tree to see what change in radioactivity content in the coconut there may be compared to unfertilized trees. Also, it would be desirable to have samples from trees wherein 2 inches of top soil were removed as suggested by the Ad Hoc Committee for Pandanus and from trees where both fertilizer and top soil removal were used.

It would be desirable to sample coconut meat and coconut frond for  $^{137}\text{Cs}$  from existing trees on Bikini. If levels in frond and meat are related in some way, then predictions of coconut meat  $^{137}\text{Cs}$  could

be made using results of analysis of frond from young trees, years before these trees produce coconuts.

An indication of the significance of radioactivity in coconut meat can be seen by reviewing the production and use of copra. The natives harvest the coconuts which have taken about a year to mature and extract the coconut meat from the shell and husk. The shells are sometimes used by the natives for eating utensils and such shells may find their way into commerce in the form of charcoal. Husks are used in cooking fires and as a mulch in planting crops including coconut trees. Cord and rope are also made from husk fiber. Sleeping mats are made from coconut palm frond along with other items of handicraft such as hats and handbags. The "Kili Bag," which is a handbag manufactured by the Bikinians, is made from palm frond and Pandanus leaf and is widely known in the Pacific.

Pieces of coconut meat are sun dried, bagged, and stored under cover (warehouse) until picked up by a copra boat which may visit an Atoll two or three times a year. Collection of 25 to 50% of a years copra production in a warehouse would accumulate a sizable quantity of  $^{137}\text{Cs}$  at the 1969 levels. Fresh coconut meat is about 50% water, 30-40% oil, and 10-20% copra meal by weight.

Copra processing plants which process copra from islands of the western Pacific are in the Philippines and Japan. The copra is washed and run through a press which extracts the coconut oil leaving a residue which is called copra meal. The oil is used in foods and cosmetics. The oil is reported to have a low mineral content and very low levels of radioactivity. Radioactivity such as  $^{137}\text{Cs}$  in the processed copra ends up in the copra meal which contains about 20% protein and 5% oil. This meal is a good quality animal feed and is used for dairy cows. On a gram basis the level of  $^{137}\text{Cs}$  in copra meal can be expected to be 5 to 10 times the level in fresh coconut meat. In the case of coconuts from Bikini, if the levels of  $^{137}\text{Cs}$  in future crops are as high as found in the 1969 samples, the copra meal may contain 600 to 1,200 pCi/g.

Measures recommended by the Ad Hoc Committee for minimizing levels of radioactivity in Pandanus (removing 2 inches of soil at the planting site over an area covered by the crown of mature trees) may also be needed for planting coconut trees on Bikini. Whether this is needed cannot be determined with present information. If needed, the justification would not be so much the protection of the Bikini people but rather to minimize the level of  $^{137}\text{Cs}$  in the copra meal that is a byproduct of production of coconut oil.

REPOSITORY PNNL  
COLLECTION Marshall Islands  
BOX No. 5684  
FOLDER Bikini - 1970

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Reviewed by R. Schuelke Date 4/30/97