MARY MUNRO III

INTRODUCTION

All chemical factories have a liquid waste disposal problem. It is possible, by chemical means, to remove the major portion of any toxic chemicals contained in this liquid waste, but however efficient the chemical treatment plant, some small residue of chemical substances must be left in the liquid waste.

At atomic energy factories the radio active materials produced are so valuable that they must not be discharged from the factory with the liquid waste. Also, many radio active materials are poisonous, and for this reason the discharge of radio active chemicals must be kept to an absolute minimum.

The effluent treatment system at Windscale is so efficient that less than one part per million of the radio active chemicals in the original liquid waste is finally discharged from the factory. This liquid waste is discharged through a pipe line, whose outlet is 1¾ miles out to sea.

As a final check In order to check whether the effluent treatment plants are reducing the radio active content of the discharged liquid waste to negligible quantities, samples of the sea water and mud and sand near the pipe outlet are taken daily when weather permits. If any radio active substance were discharged it might be absorbed by seaweed, plankton, shell fish or other edible fishes living in the area, near the end of the pipe line. As a consequence, samples of all living materials in this area, at frequent intervals are analysed in our laboratories for traces of radio active materials.

Certain types of seaweed are collected on the Cumberland coast and used to make laver bread for consumption in South Wales.

One great advantage of analysing for radio active substances, is the extreme ease with which they can be detected. If the proportion of certain radio active materials in seaweed or fish is as great as one million millionth part, this quantity could be detected with ease.

HISTORY OF THE MARY MUNRO III

During the laying of the waste pipe line from the Windscale Factory, a lot of work had to be done by a boat which could come close in to the shore. To build a special vessel for this purpose would have been costly. Thus, a twenty-year old Scotch fishing vessel, the Mary Munro III, was purchased on April 17th, 1950 for £2,000.

This boat was built by W. Weatherhead of Kirkenzie in 1928. It is 46 feet long, 13½ feet Beam, 6 feet 3 inches deep with a normal draught of 4 feet 3 inches.

The boat is carvel built of larch planking below bilge; pitch pine planking above bilge to bulwark, on oak framing. The deck is of Oregon pine. The engine is a 3-cylinder Kelvin, petrol start, steam diesel of 66 H.P.

After use on the pipe line operations, where it was used as a diving launch, cable carrying, buoy placing and general purpose vessel, it was converted for use as a Health Physics sea-survey vessel.

The following operations are carried out:-

(a) Collection of seawater, using Munro bottles.

(b) Bottom sampling using a special grab, which picks up a definite area of the sea bottom for each sample.

(c) Seaweed collection using special grappling irons.

(d) Fishing using a 4 feet trawl.

Certain of the fish are brought ashore for analysis in our

/laboratories

laboratories , and certain other fish are marked and returned to the sea so that fish movement in the area can be traced.

(e) Diving operations to carry out examination of the sea bed collection of seaweed and shell fish from special locations, and examination of the pipe line to ensure no serious corrosion or movement of the pipe has taken place.

(f) Measurement of Gamma radiation activity over the sea, and collection of air samples for measurement of atmospheric radio activity.

It should be noted that atmospheric air is naturally radio active, as it contains Radon and Thoron - two radio active gases which come from the Uranium and Thorium naturally present in small quantities over the entire surface of the earth.

There is also a natural Gamma radio activity at all parts of the sea, due to the potassium content of seawater, slight Uranium content and cosmic-ray activity. (Cosmic-ray activity provides similar effects in measuring instruments to Gamma-ray activity).

DIVER ARTHUR DAVIES.

GEORGE TAYLOR (CURLY).
SAMPLES & LOOKS AFTER INSTRUMENTS

TED SUTTON BOLUM.

ALEC MELLOM (SHIPPER)

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