

## Counterplans Against Radioactive Waste from in Vitro Laboratories

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Solid waste disposal is a major problem in the radioisotope utilization in the "in vitro" laboratories. This report discussed counterplans for this subject.

### 1) To diminish the quantity of the solid waste

The most radical plan for this is to recycle and not to dispose the test tubes and other devices used in the assays. But the cleaning, decontamination and checking of radioactivity are very troublesome. Moreover, the possibility of interactions of residual protein material or soap to the antigen-antibody reaction in the following assay remains. So that, the recycle of the all tubes is not recommended.

The practical plan which we adopt is to crush the plastic tubes etc. into pieces. By doing it, the size of the waste reduced to almost one third.

Then we considered the commercial kits from a viewpoint of the waste disposal. The dose of radioactivity and devices to be disposed differ widely from kit to kit even used in the same purpose. And to design the kits taking into account the waste disposal is expected. Ideas of measuring the radioactivity of "beads" and "discs" in the solid phase assays without using test tubes were proposed.

### 2) Reduction of the frequency of assays

The one idea of this is the multi-tracer method in which multiple items, necessary in the diagnosis of a disease, are measured in a single assay. For example, Bluett et al. recently reported a simultaneous radioimmunoassay of TSH and T-4 using I-125 and I-131, respectively.

Another idea is to measure multiple samples in a single assay. Our field work of screening of cretinism by TSH assay is an application of the idea. In this procedure, two blood samples are mixed and assayed in a single medium, and the result does not exceed an level the two samples are judged as normal. If the result is high, individual assays easily determine the abnormal baby. As this field work is against all newborns, samples are very large in number. But this method reduces the assay frequency to almost one half.

Those methods reduced the quantity of the radioactive waste as a whole.

### 3) Future prospect

Flow systems in the radioimmunoassay, utilizations of short life nuclides were reviewed and discussed.

Finally, non isotopic methods such as enzyme assay were introduced.

## Legal Problems in the Radiological Medical Care

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In Japan the radiological care such as X-ray emission at hospitals and clinics is regulated by the Law of Medical Care.

Though the part of the law regulation the radiological medical care was enacted in 1962 based on the level of the radiological medicine at

that time, it has not been revised at all since then.

However, the radiological medicine has greatly advanced for the last several years. Especially the application of the nuclear medical science to the medical care has increased markedly. As a result, the present statutory regulation falls much short