

# 強化輻射災害應變與管制技術之研究(3/4)

## 建立南部備援實驗室之環境試樣分析備援技術

### Strengthen research of radiation disaster response and control technology (3/4)

### Establishment the technology of environmental sample analysis in the southern backup laboratory

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#### 摘要

2011 年日本福島事故發生後，國內核能總體檢辦理成果報告敘述緊急應變機制有關輻射檢測人力及設備備援能量檢討報告之結果顯示，若在境內或鄰近之境外發生類似福島電廠核子事故，將會湧入大量需要檢測的各類農、漁、畜牧等產品，以及環境中水樣、空氣、土壤、生物樣品等樣本。然而於輻射災害發生時，為確保環境之輻射安全，在環境樣品檢測上，亦將面臨大量檢測量能之需求。因此本計畫主要目的是擴展檢測能量至環境中水樣、空氣、土壤、植物樣品與生物樣本之檢測分析技術領域，並取得相關領域檢測技術認證。

本計畫執行成果包括 1.完成核能三廠環境試樣計測比較實驗，藉此比對本實驗室樣本前處理及檢測的能力；2.完成「IAEA 國際原子能總署」環境試樣放射性分析能力試驗，驗證實驗室技術人員檢測穩定性與熟練度等項目；3.開設輻射安全及災害防救環境教育訓練課程，讓學生瞭解輻射的基本原理，並引入輻射與日常生活的關聯性及應用，進而對輻射建立正確的觀念；4.結合恆春鎮農會提供在地農產品放射性含量檢驗分析及說明，積極扮演民眾溝通、促進公民參與環境輻射監測作業，及提升南部備援實驗室曝光度；5.完成氫及銨 90 分析前處理方式作業程序書，以擴展放射性核種分析能力。

**關鍵詞:**核能三廠、比較實驗、環境試樣、放射性分析

## **Abstract**

After the Fukushima accident in Japan in 2011, the Atomic Energy Council (AEC), thoroughly reviewed the lessons learned from Fukushima accident and proposed the “Post Fukushima Safety Assessment Summary”, make a proposal of the program and then publish the report. According to the report, it implies various radiation-contaminated food must be analyzed in case of the nuclear disaster. As a result, there is a great demand for analysis of those environmental samples, including crops, fishery, livestock products, water, air, soil, and biological environmental samples. In conclusion, for the sake of ensuring the environmental radiation safety, it has to promote the capacity of radioactive analysis of the Southern backup laboratory. Therefore, the aim of this project is to enhance the capacity of radioactive analysis for environmental samples, and finally acquired the accreditation about the items of environmental samples from the Taiwan Accreditation Foundation (TAF).

Our laboratory has achieved the preset goals of this project this year. Those achievements include: (1) Collaborating with the Radiation Monitoring Center (RMC) for the task of monitoring the Maanshan Nuclear Power Plant, taking and analyzing the samples around the nuclear power plant, and carries out the comparison experiment between two offices, (2) The laboratory passes the proficiency test held by "International Atomic Energy Agency (IAEA), to verify the laboratory technicians' proficiency, (3) Conduct the on-site foodstuff radioactive analysis and face-to-face dialogs among local resident the Maanshan nuclear power plant to promote citizens' participation in environmental monitoring work, (4) Providing real-time radioactive analysis service of indigenous agricultural products and expounding the analytical result,(5) Complete the operating procedures for tritium and strontium-90 analysis pre-processing methods to expand the analysis capabilities.

**Keyword : Maanshan Nuclear Power Plant, comparative experiment, Environmental samples, Radioactivity analysis.**