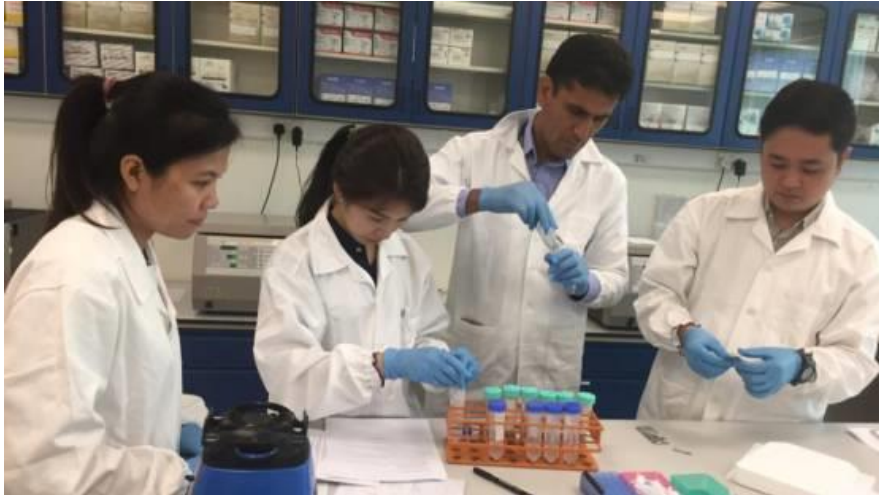


Labs in Asia Adopt Nuclear Techniques to Enhance Food Safety and International Trade

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Training on mycotoxin analysis in food samples at the Veterinary Public Health Laboratory in Malaysia. (Photo: M. Modzi/Veterinary Public Health Laboratory, Malaysia)

Animal diseases and crop pests can badly affect food supply and economies. Managing these problems can result in farming practices that involve the use of chemicals, which can lead to another problem: unsafe levels of chemical residues and contaminants in foods. To help countries enhance food safety and adhere to the stringent requirements of import and export controls, the IAEA and the [Food and Agricultural Organization of the United Nations \(FAO\)](#), recently completed a [regional project](#) in Asia and the Pacific with laboratories in 14 countries to help establish or improve their food safety testing capabilities.

Since the project began in 2016, more than 200 food safety experts from the participating countries have been trained in the use of nuclear techniques to analyse residues and food contaminants, conduct quality assurance and controls, and maintain equipment. They also took part in scientific meetings and interlaboratory proficiency testing schemes, group training on analytical methods, laboratory quality management, equipment maintenance and troubleshooting.

“We used to outsource most of our analyses to laboratories abroad,” said Moe Thein, Head of the Veterinary Assay Laboratory in Myanmar, who took part in the project. “Now we have the resources to conduct them ourselves.” The Veterinary Assay Laboratory now has the ability to screen food and animal feed for the presence of veterinary drug residues and mycotoxins — poisonous substances produced by fungi or mold — as a result of training on food safety testing and a new radioreceptor assay equipment and other laboratory items procured through the FAO/IAEA programme. The equipment uses radioisotopes, such as carbon-14 or tritium, as tracers to identify the presence, or absence, of a residue or mycotoxin. “Screening techniques, such as radio receptor assays, have a reliable testing method that improves service delivery by cutting down on external testing costs and turnaround time,” Thein said.

Jordan’s Food and Drug Administration, an institution mandated with national food safety testing, can now test for 30 more different types of antimicrobial residues, such as antibiotics, in imported and locally produced agricultural products, with experts having been trained on analytical methods, quality

control management, and with participation in proficiency testing schemes. “This can help to protect consumers, improve income and guard against antimicrobial resistance, [one of the top ten global public health threats](#) as identified by the World Health Organization, World Organization for Animal Health and the FAO,” said James Sasanya, Food Safety Specialist at the Joint FAO/IAEA Centre of Nuclear Techniques in Food and Agriculture.

In Papua New Guinea, the National Agricultural Research Institute now has the ability to screen and quantify drug residues in ‘everyday’ animal products, such as milk, thanks to an ultra-high performance chromatography instrument and a radio receptor assay system to detect chemical hazards in food. “We benefited from training of our technical staff, who now carry out the new food safety tests with confidence,” said Morris Oromu, Laboratory Manager of the National Agricultural Research Institute in Papua New Guinea. Screening of hazards contributes to increased public confidence in food products and reduces health risks, for example aplastic anemia associated with antimicrobials, such as chloramphenicol.

In the Syrian Arab Republic, the Department of Agriculture of the Atomic Energy Commission is applying new food safety knowledge to identify growth promoters used on animals to increase meat production that are prohibited by certain international trading partners, such as the European Union. Importers require assurance from exporting countries that the food they receive meets safety requirements, and one way of verifying this practice is by demonstrating the existence of reliable and verifiable systematic testing programmes for chemical hazards.

Through IAEA/FAO training and assistance to procure laboratory equipment and reagents, 10 countries — Bangladesh, Indonesia, Lebanon, Malaysia, Mongolia, Pakistan, Singapore, Sri Lanka, Thailand and the Philippines — have improved their national testing programmes by expanding their routine testing to cover more food products or by increasing the range of drug residues or contaminants for which they test.

Experts from China, Lao People’s Democratic Republic, Oman and Viet Nam also took part in some of the project’s trainings and meetings, where they learned about the latest approaches and techniques in food safety. Throughout the project, methodologies for standard operating procedures or testing residues and contaminants were shared, to harmonize routine testing among participating countries.

“Bringing together institutions of varying capabilities and capacities to work together under this regional project has facilitated the sharing of experiences and good practices,” said Gerald Cirilo Reyes, Programme Management Officer in the IAEA’s Department of Technical Cooperation. “With these capabilities, institutions in the region can now reliably analyse more than 10 000 food samples annually.”

Through the project, further laboratories in Indonesia, Malaysia, Mongolia, Pakistan, Sri Lanka, Thailand and Viet Nam were also assisted in attaining or renewing their international standard [ISO/IEC 17025:2017](#) on general requirements for the competence of testing and calibration. As a rigorous and regular assessment of laboratory services and standards, ISO certification opens pathways to international trade.

The IAEA and FAO will continue to support countries in the region in a follow-up technical cooperation project to broaden the scope of testing beyond products of animal origin, encompassing plant products, including fruits, vegetables and grains, to further enhance food safety in Asia and the Pacific.