

Regional Project Document Template (Category A)

Project concepts positively appraised should be further developed into full project documents, following the LFA.

Region	Latin America and The Caribbean Region		
Regional/Cooperative Agreement (if applicable)	Regional	Priority No. given by Regional/Cooperative Agreement (for concepts proposed by Regional/Cooperative Agreements)	
Project Title	Advancing the Role of Nuclear and Allied Analytical Techniques for the control of residues and contaminants in food/feed for human consumption, to ensure the safety/quality of the products, and public health in Latin America and the Caribbean Region.		
Field of Activity	24-Food Safety; Sector A Need A2 Restriction of access to markets by the presence of chemical residues for human health risk in food of animal and vegetable origin		
Regional Project Category¹	<input type="checkbox"/> <i>Transnational</i> <input type="checkbox"/> <i>Regional standard setting X</i> <input type="checkbox"/> <i>Capacity building for developing countries X</i> <input type="checkbox"/> <i>Joint TC activities with a regional entity</i>		
Names and contact details of Counterparts and Counterpart Institutions	Pedro Enriquez Alfaro (as DTM) - Biochemical Laboratory of Environmental Chemistry and Food.- Agricultural and Livestock Service (SAG) – Chile pedro.enriquez@sag.gob.cl Telephone: 56 2 23451840 Adress. Av. Bulnes 140 Santiago. RM Chile. Other counterparts are listed in the section on participating countries		

SECTION-1: PROJECT BACKGROUND AND JUSTIFICATION

Regional Gap / Problem / Need Analysis	<p>Chemical and natural food contaminants present health risks to local and international consumers and therefore undermine trade given the competitiveness of the international market and stringent requirements by trade partners. Many countries in Latin America and The Caribbean export various animal/agricultural foodstuff to such markets as Europe, North America and Asia as well as intra-regionally thus boosting their economies. Such trade requirements if not met, result in rejection of export consignments with huge economic implications. The European Union (EU) alone for example rejected an estimated forty consignments of foods of animal origin from the Latin American Region between 2010 and 2011 due to the presence of unacceptable levels of veterinary drug residues. Even in the absence of rejections, competition among food exporters is stiff on the international market. This therefore calls for effective residue monitoring programs supported by functional food safety laboratories meeting acceptable international standards.</p> <p>The aquaculture production sector is fast growing in the region and so is the demand on the market to ensure such products are safe. There is also increasing awareness that unsafe animal feeds (containing chemical and natural contaminants such as veterinary drugs and mycotoxins) affect food safety. These are two additional areas of concern in the region that require addressing with the help of competent analytical laboratories.</p> <p>Many official control laboratories in Latin America and The Caribbean demonstrate competence (to trading partners) following accreditation and positive audits while other laboratories are in the process. A functional network of laboratories has been established through the regional project RLA/5/055 with</p>
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enhanced capacity following harmonization of analytical methods in official control laboratories to analyses chemical contaminants in food. Five laboratories in Argentina, Chile, Ecuador, Peru and Uruguay became the project's reference laboratories and centres of excellence, training and facilitating other Member States in need, within and outside the region. This follows previous IAEA support through another project RLA/5/059 that laid a solid foundation for strengthening the analysis of pharmacologically active substances and contaminants in foods. Tailored nuclear and nonnuclear complimentary screening and confirmatory techniques that comply with international standards were used.

Enhancing the linkage/network among these reference centres on one hand and with other former RLA5059 counterpart institutions as well as new members e.g. Mexico, Colombia and El Salvador among others on the other hand will be promoted in this proposed project. Greater emphasis and focus will be on more inter-laboratory studies, exchange of personnel (both expert and younger scientists), proficiency test schemes, more innovation with regard to development and application of analytical techniques. Newer nuclear tools such as the radio receptor assays previously not accessible to the group will be used in addition to increased use of stable isotopes. The scope of food contaminants will also be widened and matrices such as aquaculture products will be considered. As the aquaculture industry grows and trade increases, so is the need to meet international agrochemical residue limits.

Various contaminants will be analysed including veterinary pharmaceuticals, other agrochemicals used in animal and plant production, heavy metals and – natural toxins such as selected marine toxins and mycotoxins. Mycotoxins are some of the commonest chemical hazards in the region and present diverse public health risks as well as hampering trade. For examples, in 2012, the European Union alone published 415 Rapid Alert System for Food and Feed notifications on mycotoxins involving export rejections, activation of product alerts and observation (26% of total notifications). Capacity to monitor the mycotoxins (including a number that are carcinogenic) and the need to communicate the risk and also educate producers and consumers will be a significant contribution of food safety laboratories under the proposed network to the socio-economic wellbeing of the Member States in the region. Harmonizing analytical methods to for example meet US, EU and Codex standards guidelines will improve and enhance the credibility of the laboratories and therefore Member States internationally.

Advances in technology and techniques and their impact on international trade and local/national consumer safety how public health require that stakeholders such as laboratories continuously improve and enhance their capabilities and sustain the functional network of laboratories as established through recent regional project RLA5055 and RLA5059 which have added value to the laboratories.

The proposed project will utilize this added value to implement additional and pending activities including innovation and successful application of new methods in existing national residue monitoring programs including use of validated official methods. More inter-laboratory activities including the exchange of experienced and less experienced technical personnel will be done. Inter-laboratory support and collaboration will help more Member States of Region, in obtain laboratory accreditation. Continued training, minor laboratory procurements including procurements of materials for proficiency or inter-laboratory tests will be needed.

The project also intends to conduct residues contaminant degradation studies to help evaluate a complete picture of residues in foods (including common or emerging parent analytes and their metabolites) that contribute to violative and unsafe levels that could result in rejection of exported products.

Application of harmonized analytical methods and technology will be disseminated widely nationally and regionally to other Member States previously

	<p>not involved such as but not limited to Colombia, Mexico, El Salvador, Jamaica and Belize, also, a strong laboratory network in the region lays a solid foundation for interregional collaboration in the area of food safety.</p> <p>To further advance the role of nuclear techniques in food and agriculture, the project plans to increase and improve application of current and/or new methods (e.g. radio receptor assay techniques) in participant laboratories, sharing knowledge in country; use more and newer techniques not used, educating other Member States in the region on the techniques</p>
Why should it be a regional project?	<p>Most Member States in Latin America and the Caribbean face similar challenges associated with various chemical and natural contaminants in food for human consumption and animal feeds with regard to provision of a safer/quality food supply for local and national consumption and also competitive on the international market (in Asia, Europe, USA and in the region). The challenges and needs call for common solutions based on a united approach with individual Member States interacting more regularly as a group through a regional project.</p> <p>Laboratory capacities in a number of Member States have been strengthened and enhanced over the years and techniques harmonized to a great extent through for example recent regional projects such as RLA5055 and RLA5059. Nevertheless, more work needs to be done.</p>
Stakeholder Analysis and Partnerships	<p>The project has FAO support especially through the technical area of Food Safety and Food Quality of the FAO Regional Office for Latin America and the Caribbean. The project also fits into the FAO strategic objectives such as ensuring food security through a safe food supply. A number of Member States food safety laboratories have received and hope to continue receiving support from the EU e.g. in strengthening laboratory infrastructure and instrumentation. Respective governments are also supportive and a number have cost-shared the purchase of expensive analytical instrumentation that include use of stable isotopes.</p> <p>Participants in the recently closed project RLA5059 have invested extensively in analytical instrumentation. For examples, Chile (SAG), recently procured a state of the art LCMSMS (at ~450,000 USD cost share with the IAEA) that is now in use and ready to support other Member State in and outside the region. Argentina (SENASA) purchased four new Liquid Chromatographic instruments in 2013 alone and so has Bolivia (liquid chromatography) and Venezuela (LCMSMS) among many others. There is also support from The Organismo Internacional Regional de Sanidad Agropecuaria (OIRSA), a 60 year old interregional organization of Central America providing technical cooperation to the Ministries of Agriculture/Livestock to facilitate economic and social development in Central America. Additional support is expected from other international trading partners.</p> <p>Farmers/producers who will also be instrumental in providing analytical samples and consumers who will support advocacy and awareness will be how users final beneficiaries. Food safety laboratories (whose capabilities will in turn be advanced and strengthened) will be active in collecting and analysing food samples, disseminating findings and informing good agricultural practices.</p>
Overall Objective (or Developmental Objective)	<p>To advance and enhance the role of nuclear (and allied analytical) techniques in the control of chemical/natural contaminants in food stuffs for the benefit of local public health in Latin America and the Caribbean and to help to improve the competitiveness of the region's food stuff on the international market. Use the same capabilities for monitor the feed safety in the region. This will be based on an existing network of laboratories currently aiming at self-sustainability and being as wide as possible in the region.</p>
Objectives analysis	<p>Local public health and international markets demand safe foods free of harmful contaminants. This can be achieved through contributions from a vibrant national</p>

	<p>residue program at the heart of which is a food safety laboratory of international repute. Otherwise public health is compromised and Member States are outcompeted on the international market. Member States may also lose large sums of money in subcontracting costs where laboratories with technical and infrastructural limitation have to send samples elsewhere for analysis.</p> <p>Nuclear based analytical tools and techniques have contributed to functional laboratories in individual Member States in Latin America and to a sound network of regional laboratories. These have been strengthened and their actions harmonized through two recent regional projects RLA5055 and RLA5059, respectively. There is need to consolidate these achievements by advancing the role of nuclear tools in food safety (including introduction of techniques and tools hitherto not applied). Remaining gaps such as the need to complete on-going accreditation processes and elevation of the state of art laboratories in more Member States in required.</p> <p>Support is also needed to complement the laboratories with better capabilities to continue assisting others in the network/region. The network also requires expansion and further harmonization of new, emerging and demanding yet inevitable analytical techniques. A united/cooperating regional network of laboratories enables risk regulators from the regions to speak as a block on food safety standards/guidelines and international trade.</p>
Role of nuclear technology and IAEA	<p>The project will involve: use of gas chromatography with ⁶³Ni based electron capture detectors (beta radiation based); use of stable isotopes with liquid/gas chromatography coupled with mass spectrometry; use of radio receptor assay techniques based on ³H and ¹⁴C tracers; elemental analyses with ICPMS (including isotope dilution/ratio), Atomic Absorption Spectroscopy among others</p>

SECTION-2: PROJECT DESCRIPTION

Project Specific Objective (Outcome in the LFM)	<ol style="list-style-type: none"> 1.- Develop and expand analytical capabilities for detection of residues in foods and feeds, in official laboratories of Latin America and the Caribbean. 2.- Disseminate and incorporate applications using nuclear technique in diagnostic veterinary residues in food (use of radio receptor assay techniques based on ³H and ¹⁴C tracers CHARM and use of stable isotopes with liquid/gas chromatography coupled with mass spectrometry). 3. - Strengthen and advance the implementation of quality assurance systems of official laboratories in the region. 4. - Standardize confirmatory analytical techniques between laboratories equivalents of Latin America and International reference laboratories of Europe, Asia and EE.UU according to international standard. 5. Improve the certification of the animal and vegetable products for exports, in compliance with various international requirements for these markets. 6. Contribute to improve the public health in Latin America and the Caribbean , with the incorporation of new substances (drugs and contaminant), matrixes and samples, in the national residues control plan.
Performance Indicator(s)	<ol style="list-style-type: none"> 1.1 New analytical capabilities developed and operational in the region and by country. (year 0 - year 4) Annual Reports. 1.2 New techniques included in official residue control programs by Member States. (year 0 - year 4) Annual Reports.

	<p>2. Analytical techniques implemented using nuclear and complimentary applications, operating in the region and by country. (year 0 - year 4) Annual Reports.</p> <p>3. Laboratories with quality systems operating and accredited according to ISO. (year 0 - year 4) Annual Reports.</p> <p>4. Number of harmonized and standardized analytical techniques between reference laboratories and regional laboratories.</p>
Project Logical Framework Matrix	<p><i>Attach the full Logical Framework Matrix (Appendix A).</i></p> <p>To be developed</p>
Physical Infrastructure and Human Resources	<p>Participating laboratories have necessary physical infrastructure and human resources. For examples, the SAG laboratory is located in the Laboratory Complex Lo Aguirre - SAG, Ruta 68 Km 22 Pudahuel. Santiago-RM.</p> <p>The laboratory has physical spaces and segregated areas for development activities under the project, there are qualified technical staff with experience in instrumental analysis (CHARM, HPLCMsMs, HPLC /DAD/Fluo, Atomic absorption spectrophotometer, GC/MsMs, GC/ECD/FID, ELISA) for determination of residues an contaminant in animal, feed and vegetable matrices. The laboratory is accredited under ISO 17025 since 2007.</p> <p>The participating countries should have adequate and available analytical capabilities for analysis of residues and contaminants: HPLC / GC / Aa / ELISA, CHARM, HPLCMsMs and CGMsMs among other, with staff adequate and trained in analytical instrumental analysis.</p>
Safety and Regulatory Infrastructure	<p>Infrastructure of the laboratories should comply with the national and international standards, both with regard to biosafety standards and procedures according to ISO quality management.</p> <p>The laboratory of QAA of the SAG is recognized as an official laboratory of the National Programs of Residues Control for Products Livestock, by the European Union, USA, Canada and other countries and complies with international standards as a laboratory of analysis.</p>
Requirements for Participation	<p>Official national laboratories in Latin America and the Caribbean actively involved in chemical residues and contaminant analysis in food and feed, using screening and/or confirmatory analytical tools; Participants should have institutional support to facilitate development and implementation of planned activities. Member States involved in previous regional TCPs such as RAL5055 and RLA5059 will form the basis while new ones are most welcome to participate.</p> <p>An initial list of potential institutions participants, and contacts:</p> <p>CHILE; (Subdepartamento de Química Ambiental y Alimentaria, Servicio Agrícola y Ganadero; SAG – Ministerio de Agricultura de Chile). Pedro Enriquez Alfaro, E-mail: pedro.enriquez@sag.gob.cl, Phone 56 2 23451840.</p> <p>ARGENTINA; (Dirección de Laboratorios y Control Técnico; Servicio Nacional de Sanidad y Calidad Agroalimentaria, SENASA). Carlos Chiacchio, E-mail: cchiacch@senasa.gov.ar, Phone 54 11 48361994</p> <p>URUGUAY; (División de Laboratorios Veterinarios Miguel C. Rubino, DILAVE). Osvaldo Rampoldi Sobrido, E-mail: orampoldi@gmail.com Phone 598 2 2221063</p> <p>BOLIVIA; (Laboratorio LIDIVET, Servicio Nacional de Sanidad Agropecuaria SENASAG – Santa Cruz). Omar Benavides Céspedes E-mail:</p>

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	<p>Participating Member States As mentioned in the requirements for participation. Resource (providing expertise)x <input type="checkbox"/> Target (receiving expertise)x</p>
<p>Other considerations, e.g. environment, gender</p>	<p>The proposed analytical development, optimize diagnostic processes using analytical techniques with a minimum use of organic solvents, clean applications that reduce environmental impact. Nuclear screening techniques are a good alternative as the use of radio receptor assay techniques based on 3H and 14C tracers.</p> <p>Also, assess the presence of residues and contaminants in agricultural primary products indirectly can allow possible negative impacts of pollutants or unwanted substances in the environmental, such as pesticides and heavy metals, allowing you to take corrective or mitigating measures to improve and secure production environments and allow healthy food production.</p> <p>The project benefits the people of the region, ensuring healthier food helping to improve public health in each country, better access to healthier and higher quality food. Improves food trade, supporting the production chain from primary farmers, both in local consumption and for export.</p>

Project duration	The project is considered for a period of two years (2016 – 2017) Consider an extension of the project for the next cycle 2018-2109, allowing deepen and extend the analytical capabilities of the participating laboratories according to new needs and requirements of food safety programs in each country and region.			
Funding and project budget	(from concept document – to be adjusted during project design) <i>Provide an estimate of the total project costs and the funding expected from each stakeholder:</i>			
		Euro	Comment	
	<i>Government cost-sharing</i>			
	<i>Counterpart Institution(s)</i>			
	<i>Other partners</i>			
	<i>IAEA TCF:</i>	<i>FE/SV/TC/WS</i>	300.000	More experienced personnel will be restricted to a maximum of 2 weeks SV while developing Scientists/Technician will require more time (FE); some training courses will also exceed five working days.
		<i>Workshops</i>	60.000	Will include technical and stakeholder workshops
		<i>Experts</i>	60.000	Mainly local/ARCAL experts.
		<i>Equipment</i>	120.000	For minor laboratory materials including starter packages
<i>TOTAL</i>		<i>580.000</i>		

SECTION-3: IMPLEMENTATION ASPECTS

Implementation Strategy	<ul style="list-style-type: none"> - The project has the support IAEA and National Institutions for the various governments of the region. - The institution participating of the different, countries must have institutional support for the execution and implementation of activities. - The participating institutions must have the infrastructure, equipment, staff appropriate for participation in the project. - The reports will be sent to authorities in each country and assess progress according to the indicators. - The participants of each activity must demonstrate technical competence and be an active part of the project. - The monitoring activities must be considered as an official program with
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	technical support of the institution.
Monitoring and Reporting	<p>Reports should be annual, by country and regional, with continuous monitoring of participating laboratories according to their commitments.</p> <p>Each activity will have a plan of action and implementation, which will be monitored as an indicator of compliance. (by country)</p> <p>The reports will be sent to the IAEA and to the institutions responsible for each country.</p>
Risk Management	<p>The national program for control residues is considered a strategic line for each country for the development and promotion of exports, and the safety of the food.</p> <p>These programs are part of the government's objectives and of the policies to ensure food quality for consumers in the country.</p> <p>Therefore, institutional support is required in order to ensure the sustainability of the project under an official program.</p> <p>Changes to this strategy may be considered negatively in the participation of a country.</p>

SECTION-4: WORKPLAN

Project Workplan	<i>Complete the workplan (Appendix B) and indicate below additional relevant information, if any.</i>
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