
Experience on radioactivity monitoring of scrap metals in Madagascar

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Madagascar in Brief

Area	587 041 km ²
Climate	tropical along coast, temperate inland, arid in south
Population	15,982,563 (July 2001 est.)
Increase in population	3.02% (2001 est.)
mainstay of the economy	Agriculture, fishing and forestry (30% of GDP and more than 70% of export earnings)
Industry	textile manufacturing and processing of agricultural products
Mining	Madagascar produces also chromium, mica and graphite. Its subsoil is rich in precious stones (gold, emerald, sapphire,...) and radioactive ores
Import	Industrial products, foodstuff and scrap metals





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sustainable development*

Regulation framework : previous regulations

- Decree n° 92/869 of 30/09/1992
 - Establishment of Madagascar-INSTN
- Decree n° 93/243 of 29/04/1993
 - Protection against ionising radiation
- Interministerial order n° 3961/93 of 06/08/1993
 - Modes of monitoring and assessment of radionuclide level in foodstuff
- Customs memorandum n° 1240/MDB/SG/DGRF/D1/SLF/AR of 11/03/1997
 - Customs clearance of scrap metals



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Regulation framework : new law and decrees

- Law n° 97-041 of 2 January 1998 : Protection against the dangers of ionising radiation and radioactive waste management in Madagascar.
- Decree n° 2002-569 of 04 July 2002: Attributions and functioning of various organisms in charge of the protection against ionising radiation and radioactive waste management in Madagascar.
 - The National Authority for Radiation Protection and Safety (ANPSR : AUTORITE NATIONALE DE PROTECTION ET DE SÛRETE RADIOLOGIQUE) is in charge of enforcing the law.
 - The Radiation Protection Technical Organism (OTR : ORGANE TECHNIQUE DE RADIOPROTECTION) assists the National Authority in the field of Radiation Protection.
 - The Central Bureau of Radioactive Waste Management (OCGDR : OFFICE CENTRAL DE GESTION DE DÉCHETS RADIOACTIFS) supports the National Authority in the field of radioactive waste management.



Regulation framework : new law and decrees

- Decree n° 2002-1199 of 07 october 2002 : General principles of radiation protection.
- Decree n° 2002-1274 of 16 october 2002 : General principles of radioactive waste management.
- Decree n° 2002-1161 of 02 october 2002 : General principles related to the storage and use of ionising radiation sources for medical purposes.
- Law and decrees are based on ICPR publication n° 60 and the BSS 115, 1997.

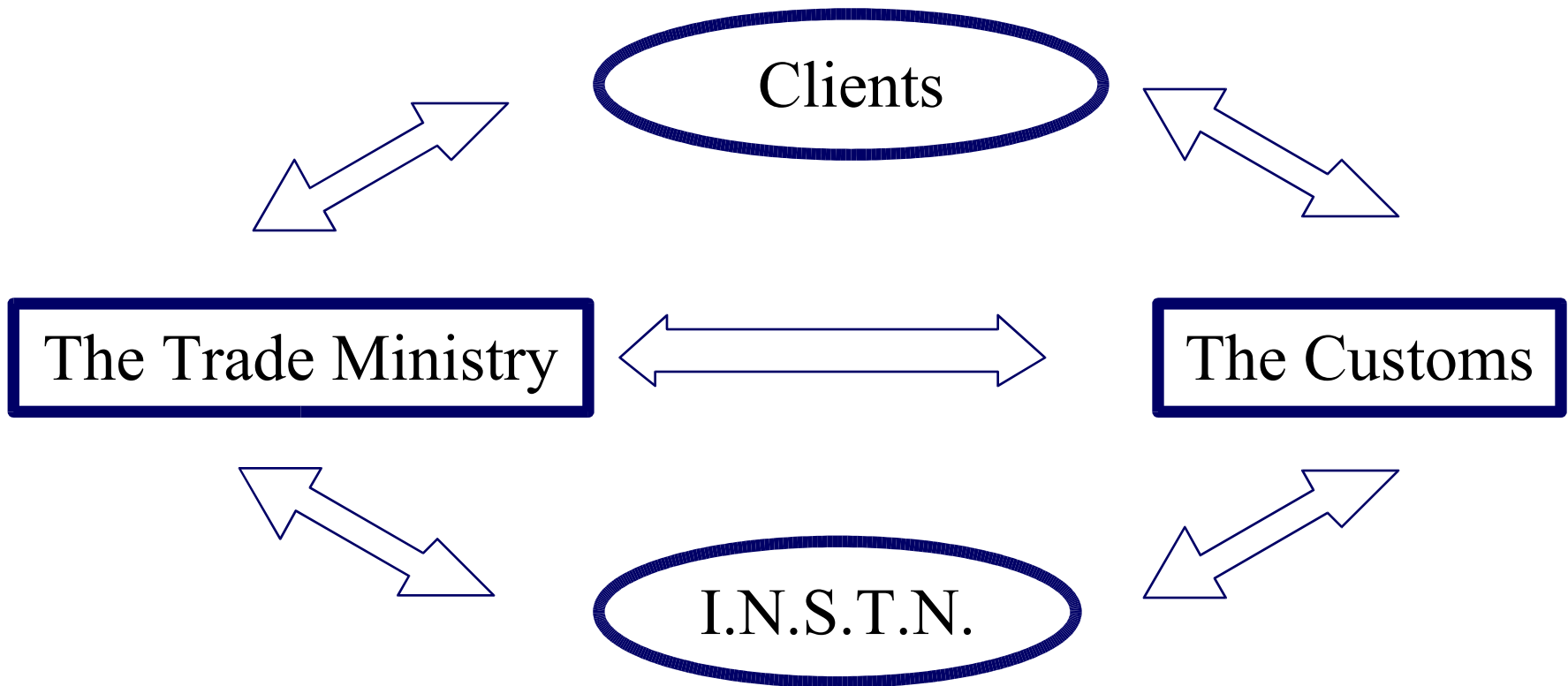


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Regulation framework

- During the transition period, Madagascar-I.N.S.T.N. is in charge of the compliance to the regulation and standards.

Bodies involved in the surveillance of imported scrap metal





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Administrative procedure

■ Sampling

- At the entrance airport or harbours.
- Done by Customs or Ministry of Trade officers.

■ Radio-analytical work

- Done by Madagascar-I.N.S.T.N.

■ Authorisation of consumption

- After the analytical report produced by Madagascar-I.N.S.T.N., and other laboratories.
- Delivered by the Ministry of Trade.

Standards used

Maximum acceptable level (for foodstuff but not for scrap metals !)

	Maximum acceptable level (Bq.kg ⁻¹)			
	Baby foods	Dairy products	Drinking	Other foodstuff
Strontium isotopes, esp. Sr-90	75	125	125	750
Iodine isotopes, esp. I-131	150	500	500	2000
Alpha emitter Pu and trans-Pu isotopes, esp. Pu-239 et Am-241	1	20	20	80
Other radionuclides with half life > 10 days, esp. Cs-137 et Cs-134	400	1000	1000	1250



Final remarks

- Madagascar-I.N.S.T.N. receives on average 1 request per week of scrap metal analysis.
- This number cannot cover all the activity related to scrap metal business in Madagascar.
- After 10 years of surveillance, we have not yet detected any critical radioactivity level in scrap metal.
- Due to radio-analytical limitation, only screening of gamma emitters (Cs-137) can be done on routine basis.