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REDUCTION

RADIOACTIVITY
MANAGING CONTAMINATION RISKS

The law requires the radioactivity of foodstuffs and environmental elements to be controlled. You want to check the radioactivity of your products, determine whether they are biobased, gauge the impact of your activity on the environment and comply with the limits laid down by law and guarantee that your products will make it to market ? SGS can help you control the risk of radioactive contamination of the environment and the food chain by carrying out measurements on a wide range of radioactive compounds.

REGULATORY CONTEXT

The risk of radioactive contamination of foodstuffs and the environment is particularly closely monitored and specific ministerial orders set out the ways in which these matrices must be controlled.

Water for human consumption

According to the French ministerial order of 12 May 2004, the radiological quality of water meant for human consumption must comply with the following limits :

- Tritium activity < 100 Bq/L
- Gross alpha activity < 0.1 Bq/L
- Gross beta residual activity < 1 Bq/L
- Total Indicative Dose (TID) < 0.1 mSv/year per person.

If the gross alpha activity and the gross beta residual activity exceed these limits, then the natural and artificial radionuclides must be identified and quantified in order to evaluate the TID.

Exportation of foodstuffs

Some countries demand a radioactivity analysis certificate for foodstuffs before allowing them to be sold on their territory.
According to OJEU 75/1 of 24/03/2000, the accumulated maximum radioactive level in terms of Cs134 and Cs137 must not exceed :

- 370 Bq/kg for milk, dairy produce and baby food
- 600 Bq/kg for other foodstuffs products.

Monitoring hospital waste

Since 2008 (French ministerial order of 23 July 2008) nuclear medicine departments have been obliged to monitor their waste water so as to avoid releasing contaminated water into the environment (patients release the radionuclides used in their treatment, particularly in their urine).

Landfill

Landfill sites are equipped with security gates, which detect potential contamination in the waste carried by the trucks arriving at the site. SGS checks your waste and makes sure that it is within the radioactivity limits set for each type of landfill site. If radioactive contamination is detected, SGS performs your radioactivity measurements.

Eco-system monitoring

SGS is also able to conduct studies on an entire eco-system (fauna, flora and minerals for a whole region) if it is deemed likely to be contaminated, or simply for environmental monitoring purposes.

Measurements at nuclear sites

You can also call on our experts to carry out measurements on old nuclear sites with in order to renovating them.

SGS

Environmental matrices

- Gas samples : air...
- Liquid samples : sea water, fresh water...
- Solid samples : soil, sediment, sand, fauna, flora, ash, various elements

Process waste

- Hospital waste
- Industrial waste...

Other matrices

- Paper
- Plastics
- Polymers in all forms...

SGS'S EXPERTISE

Our labs' specific equipment and analysis methods enable us to perform your radiological measurements in the best possible conditions.

Processes

After processing the sample, we measure the artificial radionuclides such as Strontium-90 and Caesium-134 and 137 in order to issuing a radioactivity analysis certificate.

Physical and chemical processing equipment

- Filtration systems
- Ovens and furnaces
- Crushers and sifters
- Freeze-dryers
- Precision scales

Radiological measurement equipment

- Gamma spectrometry : our gamma spectrometer, equipped with an ultra-pure germanium detector and a low-background lead chamber, can be used to measure natural and artificial gamma radionuclides with an energy > 50 KeV
- Proportional counter : our alpha-beta gas proportional counters measure gross activity by discriminating the alpha and beta energies emitted
- Liquid scintillation : our TRICARB TR1050 low-background liquid scintillation counter allows us to measure pure beta emitters such as Tritium, Carbon-14 and Nickel 63

Measurement of biobased matrixes

Bioplastics, biopolymers, cosmetics… If your product is made from natural elements, SGS offers to measure its Carbon-14 content in order to determine its biobased content, whatever the matrix.

SGS, AN ACCREDITED ORGANISATION

ISO 17025 accreditations COFRAC N°1-0281, Testing, scope available on www.cofrac.fr/en/home

- Programme 135 «Laboratory analysis of radionuclides present in water : total α and β activity, β- and γ-emitting radionuclides»
- Programme 99-4 «Analysis of chemical contaminants in animal products and foodstuffs meant for human or animal consumption – γ-emitting radionuclides» (Bioindicators)

ASN approval

(Laboratory approved by the French Nuclear Safety Authority for radioactivity measurements in environment – detailed agreement available on the website of the French Nuclear Safety Authority)

Water	Soil	Biological matrices	Aerosols	Gas/Air
γ–emetting radionu-clides	γ–emetting radionu-clides	γ–emetting radionu-clides	γ–emetting radionu-clides	Tritium (^{3}H)
Gross α activity			Gross β activityl	Carbone 14 (^{14}C)
Gross β activity				
Tritium (^{3}H)				

List updated by the ASN on 1st January 2016

Approval of the ministry of health and the ministry of the environment for radioactivity measurements in the environment

Participation in National Regulatory Bodies (BNEN)

CONTACT

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