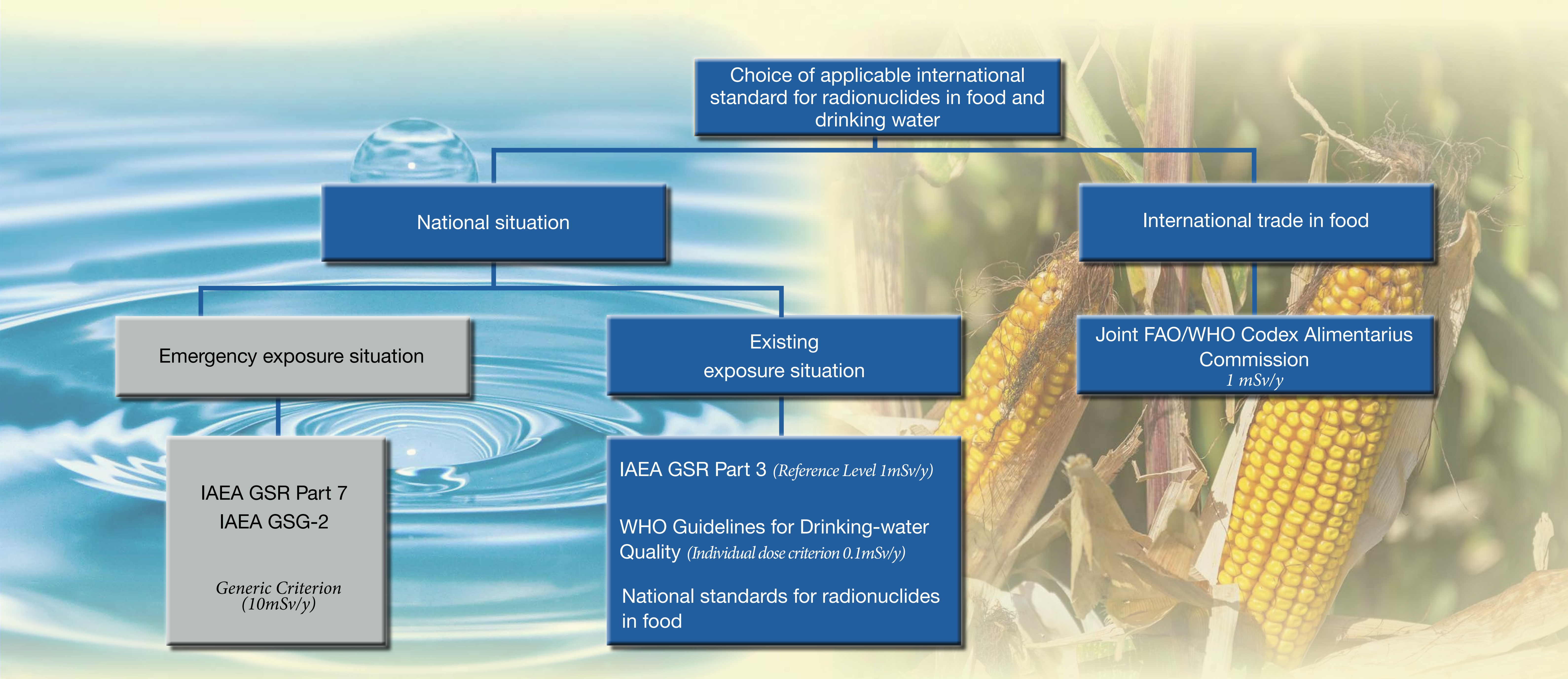


# International Standards for Managing Radionuclides in Food and Drinking Water

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Radionuclides of natural origin are routinely found in food and drinking water. Radionuclides of artificial origin can also be present and arise from authorized discharges, nuclear weapons testing or as a result of past nuclear accidents. In situations where elevated concentrations of radionuclides are present in food and drinking water over an extended period of time, national authorities may need to consider some form of restriction. Actions to restrict the consumption of food and drinking water need to be both justified and optimized. International standards and guidance in this field have been developed by FAO, IAEA and WHO.



## WHO Guidelines for Drinking Water Quality

[http://www.who.int/water\\_sanitation\\_health/dwq/guidelines/en/](http://www.who.int/water_sanitation_health/dwq/guidelines/en/)

- Apply to both natural and artificial radionuclides
- Sampling and analysis methodologies are described
- Radon in drinking water is discussed
- Most drinking water supplies worldwide can meet these criteria

Representative radionuclides	Guidance Level (Bq/L)
$^3\text{H}$	10 000
$^{14}\text{C}$	100
$^{90}\text{Sr}$ , $^{131}\text{I}$ , $^{134}\text{Cs}$ , $^{137}\text{Cs}$ , $^{238}\text{U}^*$	10
$^{226}\text{Ra}$ , $^{228}\text{Th}$ , $^{230}\text{Th}$ , $^{232}\text{Th}$ , $^{234}\text{U}$ , $^{239}\text{Pu}$ , $^{241}\text{Am}$	1
$^{210}\text{Pb}$ , $^{210}\text{Po}$ , $^{228}\text{Ra}$	0.1

\* Uranium is normally controlled on the basis of its chemical toxicity.

## IAEA International Basic Safety Standards GSR Part 3

[http://www-pub.iaea.org/MTCD/publications/PDF/Pub1578\\_web-57265295.pdf](http://www-pub.iaea.org/MTCD/publications/PDF/Pub1578_web-57265295.pdf)

“The regulatory body or other relevant authority shall establish specific reference levels for exposure due to radionuclides in commodities such as construction material, food, feed and drinking water, each of which shall typically be expressed as, or based on, an annual effective dose to the representative person generally that does not exceed a value of about 1 mSv. “

## CODEX Standard 193-1995

[http://www.fao.org/fileadmin/user\\_upload/agns/pdf/CXS\\_193e.pdf](http://www.fao.org/fileadmin/user_upload/agns/pdf/CXS_193e.pdf)

- Covers international trade for as long as levels persist after a nuclear accident
- Focuses on residual radionuclides of importance for food
- Dose considerations assume 10% of imported food is from the affected country and contaminated at the Guideline Level (GL)
- Separate values apply to infants and non-infants
- Values for minor foods (such as spices) are higher by a factor of 10

Representative radionuclides	Guideline Level (Bq/kg)	
	Infant Foods*	Non-infant Foods
$^{238}\text{Pu}$ , $^{239}\text{Pu}$ , $^{240}\text{Pu}$ , $^{241}\text{Am}$	1	10
$^{90}\text{Sr}$ , $^{106}\text{Ru}$ , $^{129}\text{I}$ , $^{131}\text{I}$ , $^{235}\text{U}$	100	100
$^{35}\text{S}^{**}$ , $^{60}\text{Co}$ , $^{89}\text{Sr}$ , $^{103}\text{Ru}$ , $^{134}\text{Cs}$ , $^{137}\text{Cs}$ , $^{144}\text{Ce}$ , $^{192}\text{Ir}$	1000	1000
$^3\text{H}^{***}$ , $^{14}\text{C}$ , $^{99}\text{Tc}$	1000	10 000

\* When intended for use as such.

\*\* Represents the value for organically bound sulphur.

\*\*\* Represents the value for organically bound tritium.