SANS 241-1 : 2015 - Edition 2
DRINKING WATER

	Risk	STANDARD LIMITS
Physical and Aesthetic Determinands		
Colour (mg/l as Pt-Co)	Aesthetic	≤15
Conductivity (at 25 ºC)	Aesthetic	≤170
Total Dissolved Solids (mg/l)	Aesthetic	≤1200
Turbidity (NTU)	Operational [a]	≤1
	Aesthetic	≤5
pH (at 25 ºC) [b]	Operational	≥5 to ≤9.7
Chemical Determinands – Macro Determinands		
Free Chlorine (mg/l as Cl_2) [d]	Chronic Health	≤5
Monochloromine (mg/l) [cd]	Chronic Health	≤3
Nitrate (mg/l as N) [ef]	Acute Health	≤11
Nitrite (mg/l as N) [efg]	Acute Health	≤0.9
Combined Nitrate plus Nitrite (mg/l) [efg]	Acute Health	≤1
Sulphate (mg/l as SO_4^{2-})	Acute Health	≤500
	Aesthetic	≤250
Fluoride (mg/l as F^-)	Chronic Health	≤1.5
Ammonia (mg/l as N)	Aesthetic	≤1.5
Chloride (mg/l as Cl^-)	Aesthetic	≤300
Sodium (mg/l as Na)	Aesthetic	≤200
Zinc (mg/l as Zn)	Aesthetic	≤5
Chemical Determinands – Micro Determinands		
Antimony (µg/l as Sb)	Chronic Health	≤20
Arsenic (µg/l as As)	Chronic Health	≤10
Barium (µg/l as Ba)	Chronic Health	≤700
Boron (µg/l as B)	Chronic Health	≤2400
Cadmium (µg/l as Cd)	Chronic Health	≤3
Total Chromium (µg/l as Cr)	Chronic Health	≤50
Copper (µg/l as Cu)	Chronic Health	≤2000
Cyanide (recoverable) (µg/l as CN^-)	Acute Health	≤200
Iron (µg/l as Fe)	Chronic Health	≤2000
	Aesthetic	≤300
Lead (µg/l as Pb)	Chronic Health	≤10

		Risk	STANDARD LIMITS
Chemical Determinands – Micro Determinands (continued)			
Manganese (µg/l as Mn)		Chronic Health	≤400
		Aesthetic	≤100
Mercury (µg/l as Hg)		Chronic Health	≤6
Nickel (µg/l as Ni)		Chronic Health	≤70
Selenium (µg/l as Se)		Chronic Health	≤40
Uranium (µg/l as U)		Chronic Health	≤30
Aluminium (µg/l as Al)		Operational	≤300
Chemical Determinands – Organic Determinands			
Total Organic Carbon (mg/l as C)		Chronic Health	≤10
Trihalo-methanes [h]	Chloroform (µg/l)	Chronic Health	≤300
	Bromoform (µg/l)	Chronic Health	≤100
	Dibromochloromethane (µg/l)	Chronic Health	≤100
	Bromodichloromethane (µg/l)	Chronic Health	≤60
Combined Trihalomethane [h]		Chronic Health	≤1
Total Microcystin (µg/l) [j]		Chronic Health	≤1
Phenols (µg/l)		Aesthetic	≤10

N O T E S	
[a]	Values in excess of those given in column 4 may negatively impact disinfection.
[b]	Low pH values can result in structural problems in the distribution system.
[c]	This is equivalent to 4.1 mg Cl as Cl_2/l as measured by standard DPD colorimetric and ferrous titrimetric methods.
[d]	The health concerns associated with most chemical determinands in drinking water differ from those associated with microbial contamination and arise primarily from the ability of chemical determinands to cause adverse health effects after prolonged periods of exposure.
[e]	This is equivalent to Nitrate at 50 mg NO_3^-/l and Nitrite at 3 mg NO_2^-/l.
[f]	See Annex C of SANS 241-2:2014 for an example of the sum of Nitrate plus Nitrite ratio. The sum of the ratios of the concentrations of each (as detected in the sample) to its guideline value should not exceed 1.
[g]	Due to the dynamic nature of Nitrite-Nitrate conversion in distribution networks and the potential health impact on bottle-fed infants, the standard is applicable at the point of consumption.
[h]	See Annex C of SANS 241-2:2014 for an example of the sum of THM ratio. The sum of the ratios of the concentrations of each to its respective guideline value should not exceed 1.
[j]	Microcystin only needs to be measured where algal bloom (>20000 cyanobacteria cells per millilitre) is present in a raw water source. In the absence of algal monitoring, an algal bloom is deemed to occur where the surface water is visibly green in the vicinity of the abstraction, or samples taken have a strong musty odour.

RISK*	DEFINITION
Acute Health	Determinand that poses an immediate unacceptable health risk, if present, at concentration values exceeding the numerical limits specified in this part of SANS 241.
Aesthetic	Determinand that taints water with respect to taste, odour and colour and that does not pose an unacceptable health risk if present at concentration values exceeding the numerical limits specified in SANS 241.
Chronic Health	Determinand that poses an unacceptable health risk if ingested over an extended period if present at concentration values exceeding the numerical limits specified in SANS 241.
Operational	Determinand that is essential for assessing the efficient operation of treatment systems and risks to infrastructure.
***World Health Organization (WHO) – Guidelines for Drinking Water Quality**	

MICROBIOLOGICAL DETERMINANDS

	Risk	STANDARD LIMITS
E.coli [a] or Faecal Coliforms [b] (Count per 100 ml)	Acute Health	Not Detected
Protozoan Parasites [d]		
Cryptosporidium Species (Count per 10 litres)	Acute Health [g]	Not Detected
Giardia Species (Count per 10 litres)	Acute Health [g]	Not Detected
Total Coliforms [e] (Count per 100 ml)	Operational	≤10
Heterotrophic Plate Count [e] (Count per ml)	Operational	≤1000
Somatic Coliphages [f] (Count per 10 ml)	Operational	Not Detected
Risk* : World Health Organization (WHO) – Guidelines for Drinking Water Quality		

NOTES	
[a]	Definitive, preferred indicator of faecal pollution.
[b]	Indicator of unacceptable microbial water quality, could be tested instead of *E.coli*, but is not the preferred indicator of faecal pollution. Also provides information on treatment efficiency and after-growth in distribution networks.
[c]	Confirms a risk of infection and faecal pollution, and also provides information on treatment efficiency. The detection of selected protozoan parasites confirms a human health risk.
[d]	Indicates potential faecal pollution and provides information on treatment efficiency and after-growth.
[e]	Process indicator that provides information on treatment efficiency, after-growth in distribution networks and adequacy of disinfectant residuals.
[f]	Process indicator that provides information on treatment efficiency.
[g]	Determinand that is presently not easily quantifiable and lacks information pertaining to viability and human infectivity, which, however, does pose immediate unacceptable health risks if present in drinking water.