

Sodium - 22

 $^{22}\text{Na}_{11}$

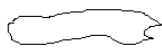
Half life: 2.6 years
 Specific activity: $2.31\text{E}+14 \text{ Bq.g}^{-1}$

Risk group: 3
 Risk colour: Yellow

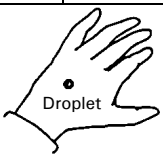
Main emissions (keV)				
	Gamma or X		Beta (Emax)	
	E	%	E	%
E1	511	181	546	90
E2	1275	100		
E3				
% omitted	0		0	

Exemption levels	
Quantity (Bq)	1E+06
Concentration (Bq.g ⁻¹)	1E+01

Transport (TBq)	
IAEA ST1 A1 value	5E-1
IAEA ST1 A2 value	5E-1

EXTERNAL EXPOSURE (mSv.h ⁻¹) for an activity of 1 MBq or 1 MBq.m ⁻² (as appropriate)				
Point source (30 cm)	Infinite plane source	10 ml glass vial	Contact with 50 ml glass beaker	Contact with 5 ml plastic syringe
				
Betas, electrons (skin dose)	Betas, electrons (skin)			
1.01E-1	10 cm 7.2E-02 1 m 0.0E+00			
	Photons (skin)			
	10 cm 1.4E-02 1 m 9.2E-03			
Gammas, X rays (deep tissue dose)	Photons (deep dose)	100 cm		
3.64E-3	10 cm 1.3E-02 1 m 8.7E-03	3.14E-4	1.13E+0	5.36E+0

The values above do not include Bremsstrahlung radiation.

CONTAMINATION		
Contamination skin dose (mSv.h ⁻¹)	Detection	Derived limits (Bq.cm ⁻²)
Uniform deposit (1kBq.cm ⁻²) 1.68E+0	Recommended probes*	Removable contamination
0.05 ml droplet (1 kBq) 6.69E-1	Alpha	1E+1
	Beta ++	Fixed contamination
	Gamma ++	2E+1
	X rays +	

* If no probes are indicated the recommended technique is to use a wipe test in association with a probe or liquid scintillation technique

SHIELDING (mm)		
Betas and electrons (Total absorption)		
Glass		0.8
Plastic		1.4
Gamma and X rays (half and tenth value thickness)		
	½	1/10
Lead	10	37
Steel	31	80

INTERNAL EXPOSURE FOR WORKERS					
COMMITTED EFFECTIVE DOSE PER UNIT INTAKE (Sv.Bq ⁻¹)					
Ingestion	f ₁		Inhalation	1 µm	5 µm
All compounds	1.000	3.2E-09	All compounds	F 1.3E-09	2.0E-09
				M	
				S	
Highest dose organ	Red marrow	20 mSv ALL _{ingestion}	6.3E+06 (Bq)	20 mSv ALL _{inhalation}	1.0E+07 (Bq)

MAXIMUM RECOMMENDED ACTIVITIES IN LOW LEVEL OR INTERMEDIATE LEVEL LABORATORIES (Bq)						
PHYSICOCHEMICAL STATE	Subject to external exposure requirements which may be more restrictive					
	Volatility factor (k)	Supervised area		Controlled area		
		Bench	Fume hood	Bench	Fume hood	Glove box
All compounds	0.01	4E+05	4E+06	1E+06	1E+07	1E+09