

Carbon - 14

 $^{14}\text{C}_6$

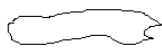
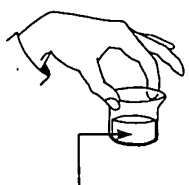
Half life: 5730 years
 Specific activity: $1.65\text{E}+11 \text{ Bq.g}^{-1}$

Risk group: 4
 Risk colour: Green

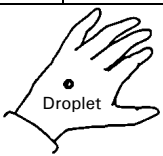
Main emissions (keV)						
	Gamma or X		Beta (Emax)	Electrons	Alpha	
	E	%	E	%	E	%
E1			157	100		
E2						
E3						
% omitted			0			

Exemption levels	
Quantity (Bq)	$1\text{E}+07$
Concentration (Bq.g^{-1})	$1\text{E}+04$

Transport (TBq)	
IAEA ST1 A1 value	$4\text{E}+1$
IAEA ST1 A2 value	$3\text{E}+0$

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
				
<i>Betas, electrons (skin dose)</i>	<i>Betas, electrons (skin)</i>			
$0.00\text{E}+0$	10 cm $0.0\text{E}+00$			
	1 m $0.0\text{E}+00$			
<i>Gammas, X rays (deep tissue dose)</i>	<i>Photons (skin)</i>			
$0.00\text{E}+0$	10 cm $0.0\text{E}+00$			
	1 m $0.0\text{E}+00$			
	<i>Photons (deep dose)</i>			
	10 cm $0.0\text{E}+00$			
	1 m $0.0\text{E}+00$			
		100 cm		
		Brem. Rad.	Brem. Rad.	Brem. Rad.

The values above do not include Bremsstrahlung radiation. Brem. Rad. indicates that it may be significant.

CONTAMINATION		
Contamination skin dose (mSv.h^{-1})	Detection	Derived limits (Bq.cm^{-2})
Uniform deposit (1kBq.cm^{-2})	Recommended probes*	Removable contamination
$0.05 \text{ ml droplet (1 kBq)}$	Alpha	$4\text{E}+2$
	Beta	$4\text{E}+2$
	Gamma	Fixed contamination
	X rays	$4\text{E}+4$
		
		
* 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		0.2
Plastic		0.3
Gamma and X rays (half and tenth value thickness)		
	$\frac{1}{2}$	$\frac{1}{10}$
Lead	-	-
Steel	-	-

INTERNAL EXPOSURE FOR WORKERS						
COMMITTED EFFECTIVE DOSE PER UNIT INTAKE (Sv.Bq^{-1})						
Ingestion	f_1		Inhalation (for soluble and reactive gases and vapours)			
Labelled organic compounds	1.000	$5.8\text{E}-10$	Vapour		$5.8\text{E}-10$	
			Dioxide		$6.2\text{E}-12$	
			Monoxide		$8.0\text{E}-13$	
Highest dose organ	Whole body	20 mSv ALI _{ingestion}	$3.4\text{E}+07$ (Bq)	20 mSv ALI _{inhalation}	$3.4\text{E}+07$ (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 except below	0.01	$1\text{E}+07$	$1\text{E}+08$	$3\text{E}+07$	$3\text{E}+08$	$5\text{E}+09$
Oxide & anhydride	1	Forbidden	$1\text{E}+06$	Forbidden	$3\text{E}+06$	$3\text{E}+08$