

Table 1. Normal tissue tolerance to therapeutic irradiation

Organ	TD 5/5 Volume			TD 50/5 Volume			Selected endpoint
	$\frac{1}{3}$	$\frac{2}{3}$	$\frac{3}{3}$	$\frac{1}{3}$	$\frac{2}{3}$	$\frac{3}{3}$	
Kidney I	5000	3000*	2300	—	4000*	2800	Clinical nephritis
Kidney II							
Bladder	N/A	8000	6500	N/A	8500	8000	Symptomatic bladder contracture and volume loss
Bone:							
Femoral Head I and II	—	—	5200	—	—	6500	Necrosis
T-M joint mandible	6500	6000	6000	7700	7200	7200	Marked limitation of joint function
Rib cage	5000	—	—	6500	—	—	Pathologic fracture
Skin	$\frac{10 \text{ cm}^2}{—}$	$\frac{30 \text{ cm}^2}{—}$	$\frac{100 \text{ cm}^2}{5000}$	$\frac{10 \text{ cm}^2}{—}$	$\frac{30 \text{ cm}^2}{—}$	$\frac{100 \text{ cm}^2}{6500}$	Telangiectasia
	7000	6000	5500	—	—	7000	Necrosis
Brain	6000	5000	4500	7500	6500	6000	Ulceration
Brain stem	6000	5300	5000	—	—	6500	Necrosis
Optic nerve I & II	No partial volume		5000	—	—	6500	Infarction
Chiasma	No partial volume		5000	No partial volume		6500	Necrosis
Spinal cord	$\frac{5 \text{ cm}}{5000}$	$\frac{10 \text{ cm}}{5000}$	$\frac{20 \text{ cm}}{4700}$	$\frac{5 \text{ cm}}{7000}$	$\frac{10 \text{ cm}}{7000}$	$\frac{20 \text{ cm}}{—}$	Infarction
Cauda equina	No volume effect		6000	No volume effect		7500	Necrosis
Brachial plexus	6200	6100	6000	7700	7600	7500	Ulceration
Eye lens I and II	No partial volume		1000	—	—	1800	Necrosis
Eye retina I and II	No partial volume		4500	—	—	6500	Infarction
Ear mid/external	3000	3000	3000*	4000	4000	4000*	Necrosis
Ear mid/external	5500	5500	5500*	6500	6500	6500*	Blindness
Parotid* I and II	—	3200*	3200*	—	4600*	4600*	Blindness
				(TD 100/5 is 5000)			Myelitis necrosis
Larynx	7900*	7000*	7000*	9000*	8000*	8000*	Clinically apparent nerve damage
Larynx	—	4500	4500*	—	—	8000*	Clinically apparent nerve damage
Lung I	4500	3000	1750	6500	4000	2450	Cataract requiring intervention
Lung II							Blindness
Heart	6000	4500	4000	7000	5500	5000	Acute serous otitis
Esophagus	6000	5800	5500	7200	7000	6800	Chronic serous otitis
Stomach	6000	5500	5000	7000	6700	6500	Xerostomia
Small intestine	5000		4000*	6000		5500	Cartilage necrosis
Colon	5500		4500	6500		5500	Laryngeal edema
Rectum	Volume 100 cm ³ No volume effect		6000	Volume 100 cm ³ No volume effect		8000	Pneumonitis
Liver	5000	3500	3000	5500	4500	4000	Pericarditis
							Clinical stricture/perforation
							Ulceration, perforation
							Obstruction
							perforation/fistula
							Obstruction
							perforation/ulceration/fistula
							Severe proctitis/necrosis/fistula, stenosis
							Liver failure

* <50% of volume doesn't make a significant change.