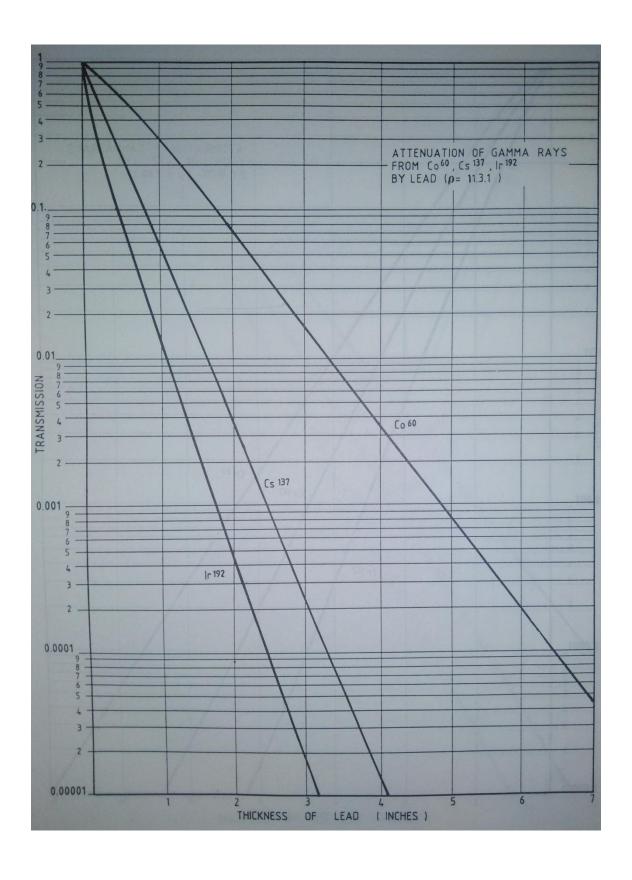
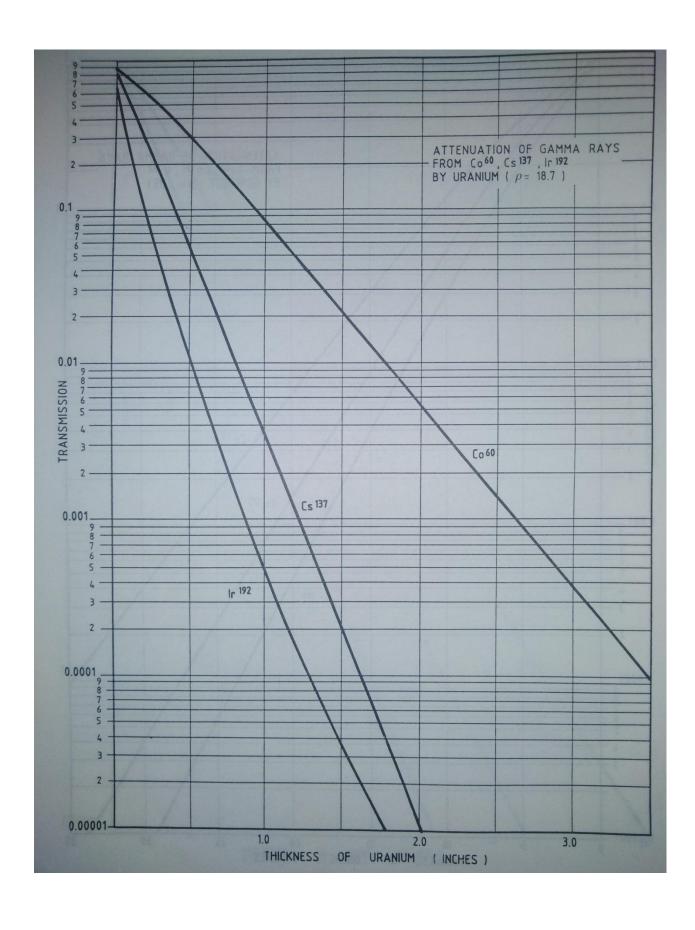
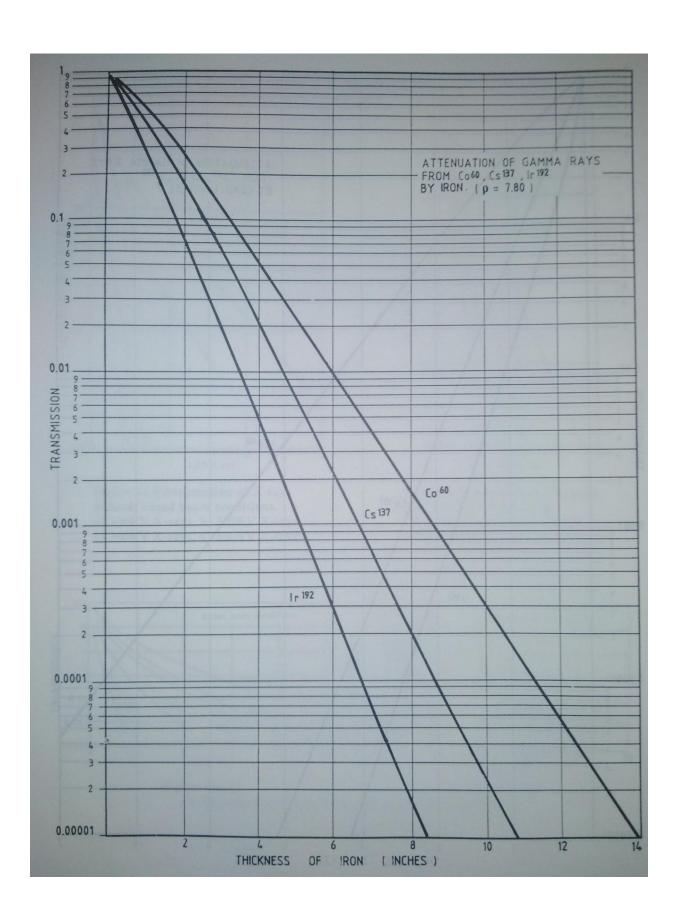
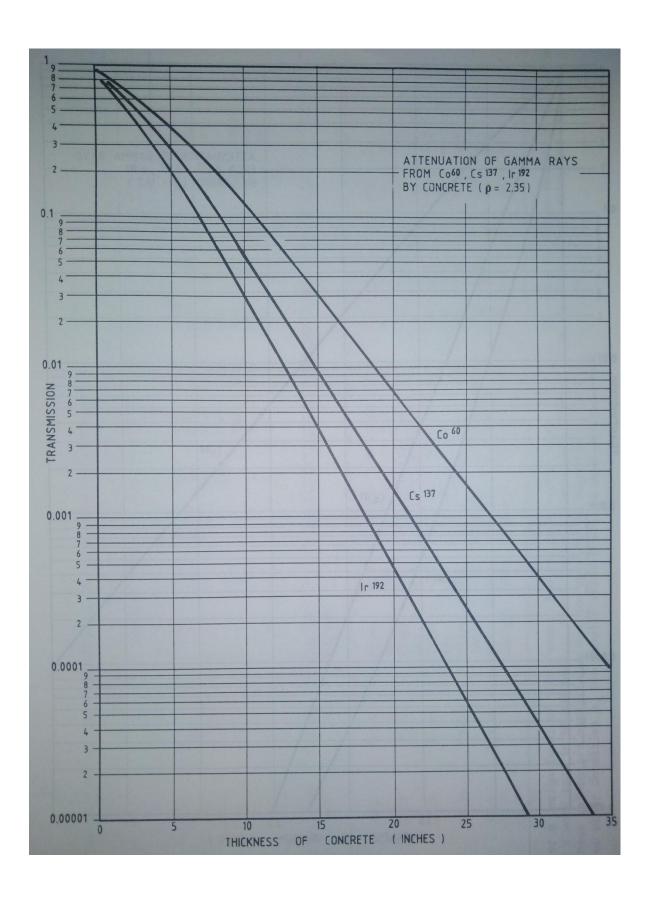
ASSIGNMENT (SHIELDING CALCULATION)

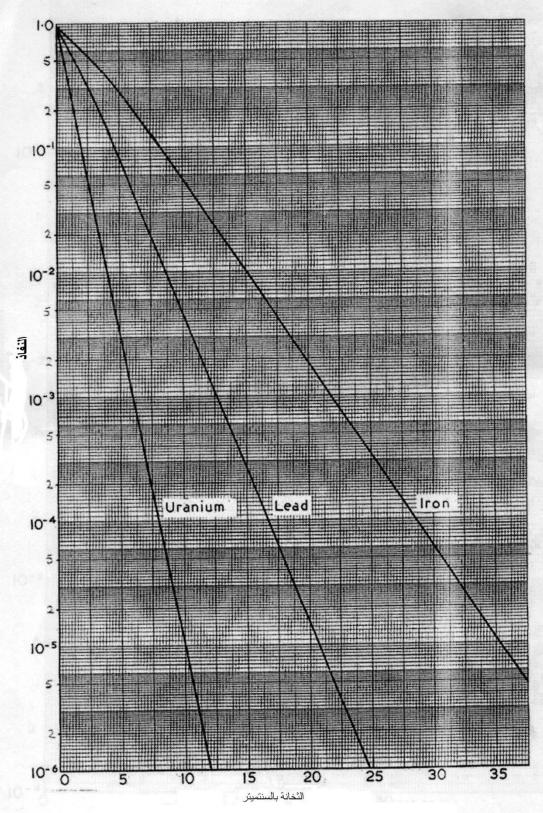
- Q.1. What is the radiation intensity in C/kg/hr at 20 meter from a 20 Ci Co-60 sealed source. The RHM factor of Co-60 is 1.33.
 - Q.2. Determine the distance from a 80 Ci Ir-192 source to the point at which the dose rate is 2 mR/hr. The RHM factor of Ir-192 is 0.5.
 - Q.3. What shielding is required to reduce the radiation intensity to 1.5 mR/hr at a distance of 18 meter from 100 Ci Co-60 sealed source. Calculate using lead, steel and concrete as shielding material.
 - Q.4. For a 30 Ci Cs 137 source, what is the distance through a 8 cm steel to a point at which the dose rate is 2 mR/hr.
 - Q.5. What is the activity of Co-60 sealed source if the measured radiation intensity at 8 m from the source is 350 mR/hr.
 - Q.6. A 100 Ci Co-60 sealed source is inside a 7.5 cm thick steel vessel. How much additional shielding is required to reduce the dose rate to 2 mR/hr at 15 m.
 - Q.7. After passing through 102 mm steel, the dose rate from an Ir-192 source at a certain point is 80 C/kg/hr. Find the distance of the point from the source.
 - Q.8. The dose rate at 01 meter from an X-ray machine operating at 200 KV is 1.3 R/mAmin. The dose rate at 3m after passing through 23 cm brick wall is 2 mR/hr when the machine is being operated at 200 KV and 15 mA. Find the lead shield thickness which can be used instead of brick wall to give a dose rate of 2 mR/hr at 3 meter.
 - Q.9. The exposure rate from an Ir-192 source ($T_{1/2} = 75$ day) at 3 meter is 72 R/hr. Find the exposure rate from the same source 25 days latter and at 09 meter.
 - Q.10. If the HVL for concrete for Co-60 is 66 mm then calculate its TVL for concrete.



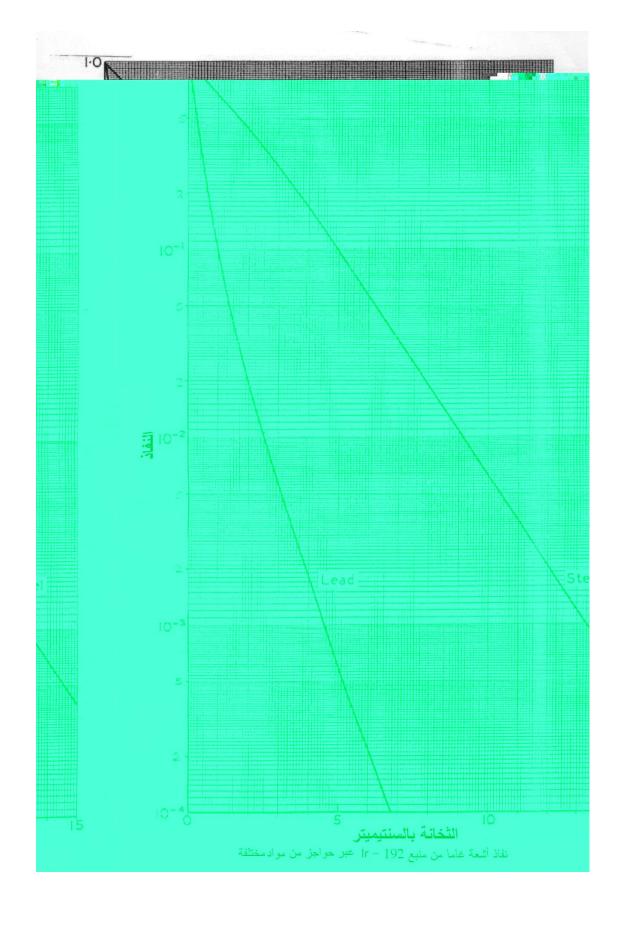


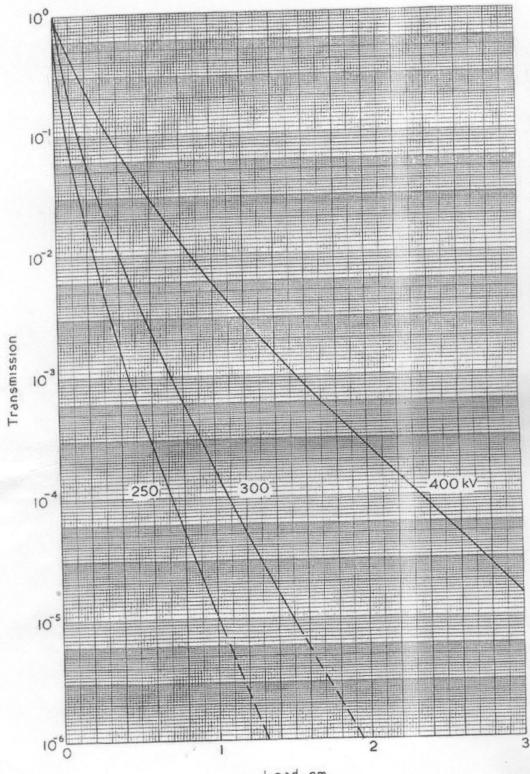






نفاذ أشعة غاما من 60 - Co عبر حواجز من مواد متنوعة





Lead, cm Transmission of 250 kV to 400 kV constant potential X-rays through lead

المعامل (mSv/mA	kVجهد الأنبوب		
0.50 ملم نحاس	0.10 ملم نحاس	0.07 ملم نحاس	
	1.8	3.2	50
0.5	5.0	7.0	75
1.6	8.5	12.0	100
6.0	17.5	23.0	150
12.5	29.0	60.0	200
19.0			250
28.0			300
56.0			400
80.0			500
330.0			1000

امعامل mSv/hr/GBq at 1 meter	نوع النظير المشع أو المنبع	
0.351	60 — Coالكوبالت	
0.078	Cs – 137السيزيوم	
0.13	192 - Ir لإيريديوم	
0.054	se - 75السيلينيوم	

μ (cm ⁻¹)		MeVالطاقة	المنبع أو النظير	
البيتون	الفولاذ	الرصاص		المشع
0.105	0.314	0.557	1.17 , 1.33	Co - 60
0.123	0.401	1.067	0.662	Cs - 137
0.144		1.435	0.311 , 0.468	Ir - 192

μ(c	/kvجهد الأنبوب(
Concreteالبيتون	الرصاص) ۱۳ ۰۸ ه ۲۰ بوب
0.456	34.65	100
0.302	31.11	150
0.248	13.86	200
0.231	7.70	250
0.227	4.08	300

معامل التوهين الخطي الكلي µ لكل من الرصاص والبيتون مع تغير جهد الأنبوبة.