data such as the name of the person in control, the name of the individual, and the individual's social security number; include the individual's exposure information; and contain the following statement: "This report is furnished to you under the provisions of Wisconsin Administrative Code Section HSS 157.19. You should preserve this report for further reference."

(b) *Annual notification.* At the request of any worker, each person in control shall advise such worker annually of the worker's exposure to radiation or radioactive material as shown in records maintained by the person in control pursuant to s. HSS 157.12 (5) (a) 1. and 3.

(c) *Notification to former workers.* At the request of a worker formerly engaged in work controlled by the person in control, each person in control shall furnish to the worker a report of the worker's exposure to radiation or radioactive material. Such report shall be furnished within 30 days from the time the request is made, or within 30 days after the exposure of the individual has been determined by the person in control, whichever is later; shall cover, within the period of time specified in the request, each calendar quarter in which the worker's activities involved exposure to radiation from radioactive material licensed by or radiation machines registered with the department; and shall include the dates and locations of work under the registration in which the worker participated during this period.

(d) *Notification to over-exposed individuals.* When a person in control is required pursuant to s. HSS 157.12 (5) (d), to report to the department any exposure of an individual to radiation or radioactive material, the person in control shall also provide the individual a report on his [or her] exposure data included therein. Such reports shall be transmitted at a time not later than the transmittal to the department.

History: Cr. Register, September, 1982, No. 321, eff. 10-1-82.

APPENDIX A

Table 11 — *Minimum shielding requirements for 200 kV[a] therapy installations*

WUT [b] in mA min		Distance in meters from source to occupied area											
40,000		1.5	2.1	3.0	4.2	6.1	8.4	12.2					
20,000			1.5	2.1	3.0	4.2	6.1	8.4	12.2				
10,000				1.5	2.1	3.0	4.2	6.1	8.4	12.2			
5,000					1.5	2.1	3.0	4.1	6.2	8.4	12.2		
2,500						1.5	2.1	3.0	4.2	6.1	8.4	12.2	
1,250							1.5	2.1	3.0	4.2	6.1	8.4	12.2
625								1.5	2.1	3.0	4.2	6.1	8.4
Type of Area	**Material**	**Primary protective barrier thickness [c]**											
Controlled	Lead, mm[d]	6.6	6.1	5.5	5.0	4.5	4.0	3.6	3.1	2.7	2.3	1.9	1.6
Noncontrolled	Lead, mm[d]	8.4	7.6	7.2	6.8	6.2	5.8	5.2	4.7	4.2	3.7	3.2	2.8
Controlled	Concrete,cm[e]	43.5	40.5	37.5	35	32.5	29.5	27	24.5	21.5	19.5	17	14.5
Noncontrolled	Concrete,cm[e]	52	50	46.5	44	41.5	39	36	33.5	30.5	28	25.5	23
		Secondary protective barrier thickness [c]											
Controlled	Lead, mm[d]	4.25	3.7	3.2	2.7	2.15	1.7	1.4	1.15	0.9	0.75	0.6	0.05
Noncontrolled	Lead, mm[d]	6.0	5.45	4.95	4.4	3.9	3.4	2.85	2.35	1.8	1.5	1.25	1.0
Controlled	Concrete,cm[e]	27	24.5	22	19.5	17	14	11.5	9.5	7	5	3.5	0.5
Noncontrolled	Concrete,cm[e]	35.5	33	30.5	28	25.5	23	20	17.5	15	12.5	10	8

[a] Peak pulsating x-ray tube potential.

[b] W—weekly workload in mA min, U—use factor, T—occupancy factor.

[c] Constant potential requires about 20 percent larger thicknesses of lead and about 10 percent larger thicknesses of concrete than those given here for pulsating potential.

[d] See Table 26 for conversion of thickness in millimeters to inches or to surface density.

[e] Thickness based on concrete density of 2.35 g cm^{-3} (147 lb ft^{-3}).

Table 12 — *Minimum shielding requirements for 250 kV[a] therapy installations*

WUT [b] in mA min		Distance in meters from source to occupied area											
40,000		1.5	2.1	3.0	4.2	6.1	8.4	12.2					
20,000			1.5	2.1	3.0	4.2	6.1	8.4	12.2				
10,000				1.5	2.1	3.0	4.2	6.1	8.4	12.2			
5,000					1.5	2.1	3.0	4.2	6.1	8.4	12.2		
2,500						1.5	2.1	3.0	4.2	6.1	8.4	12.2	
1,250							1.5	2.1	3.0	4.2	6.1	8.4	12.2
625								1.5	2.1	3.0	4.2	6.1	8.4
Type of Area	**Material**	**Primary protective barrier thickness [c]**											
Controlled	Lead, mm[d]	11.45	10.6	9.65	8.8	7.9	7.05	6.2	5.4	4.6	3.9	3.2	2.5
Noncontrolled	Lead, mm[d]	14.65	13.2	12.15	11.8	10.85	9.95	9.05	8.2	7.35	6.5	5.65	4.9
Controlled	Concrete,cm[e]	49	45.5	42.5	40	37	34.5	31.5	29	26	23.5	20.5	18
Noncontrolled	Concrete,cm[e]	58	55.5	52.5	49.5	46.5	43.5	41	38	34	32.5	29.5	27
		Secondary protective barrier thickness [c]											
Controlled	Lead, mm[d]	7.2	6.3	5.4	4.5	3.65	2.8	2.3	1.9	1.55	1.25	1.1	0.05
Noncontrolled	Lead, mm[d]	10.1	9.25	8.35	7.5	6.6	5.7	4.85	3.95	3.1	2.5	2.05	1.65
Controlled	Concrete,cm[e]	31.5	28.5	26.5	23.5	20.5	18	15	12.5	9.5	7.5	4.5	0.5
Noncontrolled	Concrete,cm[e]	41	38	36	33	30	27	24	22	19	16	12.5	10

[a] Peak pulsating x-ray tube potential.

[b] W—weekly workload in mA min, U—use factor, T—occupancy factor.

[c] Constant potential requires about 20 percent larger thicknesses of lead and about 10 percent larger thicknesses of concrete than those given here for pulsating potential.

[d] See Table 26 for conversion of thickness in millimeters to inches or to surface density.

[e] Thickness based on concrete density of 2.35 g cm^{-3} (147 lb ft^{-3}).

Table 13 — *Minimum shielding requirements for 300 kV[a] therapy installations*

WUT[b] in mA min		Distance in meters from source to occupied area											
40,000		1.5	2.1	3.0	4.2	6.1	8.4	12.2					
20,000			1.5	2.1	3.0	4.2	6.1	8.4	12.2				
10,000				1.5	2.1	3.0	4.2	6.1	8.4	12.2			
5,000					1.5	2.1	3.0	4.2	6.1	8.4	12.2		
2,500						1.5	2.1	3.0	4.2	6.1	8.4	12.2	
1,250							1.5	2.1	3.0	4.2	6.1	8.4	12.2
625								1.5	2.1	3.0	4.2	6.1	8.4
Type of Area	**Material**	**Primary protective barrier thickness[c]**											
Controlled	Lead, mm[d]	17.65	16.25	14.85	13.45	12.05	10.75	9.4	8.2	6.9	5.8	4.7	3.75
Noncontrolled	Lead, mm[d]	22.5	21.1	19.6	18.15	16.7	15.3	13.85	12.55	11.2	9.85	8.55	7.35
Controlled	Concrete,cm[e]	55	51.5	48.5	45	42	39	36	33.5	30	27	24	21
Noncontrolled	Concrete,cm[e]	64.5	62	59	56	53	49.5	46.5	43.5	40	37	34	31
		Secondary protective barrier thickness[c]											
Controlled	Lead, mm[d]	12.0	10.55	9.05	7.6	6.1	4.65	3.55	2.95	2.5	2.1	1.8	1.6
Noncontrolled	Lead, mm[d]	16.9	15.45	13.95	12.5	11.05	9.55	8.1	6.6	5.15	3.75	3.1	2.65
Controlled	Concrete,cm[e]	33	30	27	24	21	18	14.5	11.5	9	6	3.5	1.5
Noncontrolled	Concrete,cm[e]	43	40	37	34	31	28	25	22.5	19	15.5	12.5	10

[a] Peak pulsating x-ray tube potential.

[b] W—weekly workload in mA min, U—use factor, T—occupancy factor.

[c] Constant potential requires about 20 percent larger thicknesses of lead and about 10 percent larger thicknesses of concrete than those given here for pulsating potential.

[d] See Table 26 for conversion of thickness in millimeters to inches or to surface density.

[e] Thickness based on concrete density of 2.35 g cm^{-3} (147 lb ft^{-3}).

Table 14 — *Minimum shielding requirements for 1 MV therapy installations*

WUT[b] in mA min		Distance in meters from source to occupied area											
5,000		1.5	2.1	3.0	4.2	6.1	8.4	12.2					
2,500			1.5	2.1	3.0	4.2	6.1	8.4	12.2				
1,250				1.5	2.1	3.0	4.2	6.1	8.4	12.2			
625					1.5	2.1	3.0	4.2	6.1	8.4	12.2		
313						1.5	2.1	3.0	4.2	6.1	8.4	12.2	
156							1.5	2.1	3.0	4.2	6.1	8.4	12.2
78								1.5	2.1	3.0	4.2	6.1	8.4
Type of Area	**Material**	**Primary protective barrier thickness**											
Controlled	Lead, cm[b]	11	10.5	10	9	9	7	6.5	6	5	4	3.5	3
Noncontrolled	Lead, cm[b]	14	13	12.5	11.5	11	10	9	8.5	7.5	7	6	5
Controlled	Concrete,cm[c]	70	66	62	57	53	48	43	39	35	30	26	21
Noncontrolled	Concrete,cm[c]	85	81	77	72	68	63	59	54	50	45	40	36
		Secondary protective barrier thickness[d]											
Controlled	Lead, cm[b]	6	5.5	5.5	4.5	4	3	2.5	2	1.5	1	0.5	0
Noncontrolled	Lead, cm[b]	9	8	7	6.5	5.5	5	4.5	4	3.5	2.5	2	1.5
Controlled	Concrete,cm[c]	46	42	37	33	28.5	24	19	15	10.5	6	1.5	0
Noncontrolled	Concrete,cm[c]	61	57	52	48	43	39	35	30	25	20.5	16.5	12

[a] W—weekly workload in mA min, U—use factor, T—occupancy factor.

[b] See Table 26 for conversion of thickness in millimeters to inches or to surface density.

[c] Thickness based on concrete density of 2.35 g cm^{-3} (147 lb ft^{-3}).

[d] Shielding for tube housing leakage based on a weekly workload (WUT) of 5,000 mA min corresponding to a weekly workload (WUT) of 100,000 R at 1 meter (X_n = 20 R per mA min at 1 meter).