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HAZARDOUS METALS IN YELLOW ITEMS USED IN RCA'S (U)

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KEY WORDS: HAZARDOUS METALS

April 21, 1992

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HAZARDOUS METALS IN YELLOW ITEMS USED IN RCAs (U)

Yellow items used in Radiologically Controlled Areas (RCAs) that could contain hazardous metals were identified. X-ray fluorescence analyses indicated that thirty of the fifty-two items do contain hazardous metals. It is important to minimize the hazardous metals put into our wastes. We recommend that the specifications for all yellow items stocked in Stores be changed to specify that they contain no hazardous metals.

If you have any questions, please contact W.N. Rankin on extension 5-2363.

Sincerely,

W.L. TAMOSAITIS
Level 3 Manager
Interim Waste Technology

WESTINGHOUSE SAVANNAH RIVER COMPANY
SAVANNAH RIVER TECHNOLOGY CENTER

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HAZARDOUS METALS IN YELLOW ITEMS USED IN RCAs (U)

SUMMARY

Yellow items used in Radiologically Controlled Areas (RCAs) that could contain hazardous metals have been identified. It is recommended that the specifications for all items stocked in Stores that are used in RCAs be changed to specify that they contain no hazardous metals.

INTRODUCTION

Yellow items used in RCAs are currently disposed in shallow land burial. In the future, they will be disposed via an incineration/stabilization of the incineration waste, or directly to concrete vaults. In either case, it is important to minimize the hazardous metals being disposed. (Ref. 1)

SURVEY OF YELLOW ITEMS USED IN RCAs

Yellow items were identified that are utilized in RCAs. A total of fifty-two items were collected (Table 1).

X-RAY FLORESCENCE ANALYSES

X-ray fluorescence analyses were performed on the yellow items to determine if they contain hazardous metals (Table 2). Thirty out of fifty-two of the yellow items contain hazardous metals in a range of 10 ppm or greater. These hazardous metals include the following: cadmium, barium, chromium, and lead. Another metal that is being taken into account is antimony, a CERCLA hazardous element.

One example of the items that contain hazardous metals is the Pylox gloves. A pair of these gloves is used for each entry into a contaminated area. In the past twelve months 251,000 pair were used at SRS. Estimates from the x-ray fluorescence analyses indicate the gloves probably contain over 10 ppm chromium and over 1,000 ppm lead. From this one item alone over 0.14 pounds of chromium and over 14 pounds of lead are added to SRS's waste annually. If these gloves are incinerated, the concentration of hazardous metals in the incinerator ash will increase.

RECOMMENDATIONS

We recommend that the specifications for all yellow items stocked in Stores that are used in RCAs be changed to specify that they contain no hazardous metals.

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REFERENCE

(1) Wagner, J.P., El-Ayyoubi, M.A., Konzen, R.B., "Heavy Metals in Combustion of Plastics", The National Environmental Journal, pg. 42-43, November/December 1991.

TABLE 1

Yellow Items

Bucket	mop botom
Joy bottle	mop sponge
flashlight	pencil
Hilighting marker	coveralls
ear plugs	dots
yellow & magenta rope	mop stick
plastic chain rings	pHydrion tab
belt	Biossay Resample Sticker
plastic pants	Health Protection Sticker light
plastic jumper	thick gloves
sign holder	thin strip
yellow tape	Radioactive-contaminated material
stop sign	Respirator Return Record Tag
plastic cover	Hut/Windbreak acceptance tag
liquid spill sign	thin gloves
Health Protection Sticker dark	Type III vehicle radiological sign
Pylox thin gloves	Caution sticker
Remove Protective Clothing sticker	Sticky pads
Do Not Enter Decon Sign	
Protective Clothing Sign	
yellow and magenta tape	
Radioactive sticker	
Radiological used vehicle sticker	
Caution radioactive material sticker	
Internal/Fixed contamination sticker	
Caution hands off sticker large	
Caution Radioactive Strip	
Caution hands off sticker small	
Caution paper tag	
Caution plastic tag	
Radiologically Controlled Area Sign	
Contact HP prior to entry sign	
Max whole body dose sign	

TABLE 2

	A	B	C	D	E
1	CODE	SAMPLE NUMBER	SAMPLE ID	DESCRIPTION	X-RAY FLOURESCENCE
2	0	2-74205	Bucket	Bucket	Lead, Chromium, Barium
3	0	2-74206	Joy	Joy bottle	Lead, Barium
4	0	2-74207	light	flashlight	Chromium, Lead
5	0	2-74209	marker	Highlighting marker	Chromium, Lead
6	0	2-74211	plugs	ear plugs	Antimony
7	0	2-74212	rope	yellow & magenta rope	Chromium, Lead, Cadmium
8	0	2-74213	rings	plastic chain rings	Chromium, Lead
9	0	2-74216	pants	plastic pants	Chromium, Lead, Cadmium, Barium
10	0	2-74217	jumper	plastic jumper	Chromium, Lead, Cadmium, Barium, Antimony
11	0	2-74218	stand	sign holder	Chromium, Lead, Antimony, Barium
12	0	2-74219	tape	yellow tape	Lead, Cadmium, Barium
13	0	2-74221	stop	stop sign	Chromium, Lead, Barium
14	0	2-74223	cover	plastic cover	Antimony
15	0	2-74224	spill	liquid spill sign	Chromium, Lead, Antimony
16	0	2-74230	glitter	Pytox thin gloves	Chromium, Lead
17	0	2-74232	RPCS	Remove Protective Clothing sticker	Chromium
18	0	2-74233	DNED	Do Not Enter Decon Sign	Chromium, Cadmium, Barium
19	0	2-74234	Protect	Protective Clothing Sign	Chromium, Lead, Barium, Cadmium
20	0	2-74238	Magenta	yellow and magenta tape	Cadmium, Barium
21	0	2-74241	RVS	Radiological used vehicle sticker	Cadmium, Barium
22	0	2-74243	CRMS	Caution radioactive material sticker	Barium, Cadmium
23	0	2-74244	Inter	Internal/Fixed contamination sticker	Chromium, Lead, Cadmium, Barium
24	0	2-74245	CHOL	Caution hands off sticker large	Chromium, Lead, Barium, Antimony
25	0	2-74246	CRS	Caution Radioactive Strip	Chromium
26	0	2-74249	tag	Caution paper tag	Chromium
27	0	2-74250	plastic	Caution plastic tag	Chromium, Lead
28	0	2-74425	slide 1	Radiologically Controlled Area Sign	Chromium, Lead, Antimony, Barium
29	0	2-74426	slide 2	Contact HP prior to entry sign	Chromium, Lead
30	0	2-74427	slide 3	Max whole body dose sign	Chromium, Lead, Antimony, Barium
31	0	2-74428	mop	mop botom	Chromium, Lead
32	1	2-74214	belt	belt	No Hazardous metals
33	1	2-74228	HBSD	Health Protection Sticker dark	No Hazardous Metals
34	1	2-74239	sticker	Radioactive sticker	No Hazardous Metals

TABLE 2

	A	B	C	D	E
35	1	2-74247	CHOS	Caution hands off sticker small	No Hazardous Metals
36	1	2-74208	sponge	mop sponge	No Hazardous Metals
37	1	2-74210	pencil	pencil	No Hazardous Metals
38	1	2-74215	suit	coveralls	No Hazardous Metals
39	1	2-74220	dots	dots	No Hazardous Metals
40	1	2-74222	stick	mop stick	No Hazardous Metals
41	1	2-74225	tab	pHydrion tab	No Hazardous Metals
42	1	2-74226	BRS	Blossay Resample Sticker	No Hazardous Metals
43	1	2-74227	HPSL	Health Protection Sticker light	No Hazardous Metals
44	1	2-74229	gloves	thick gloves	No Hazardous Metals
45	1	2-74231	strip	thin strip	No Hazardous Metals
46	1	2-74235	Record	Radioactive-contaminated material	No Hazardous Metals
47	1	2-74236	Resp.	Respirator Return Record Tag	No Hazardous Metals
48	1	2-74237	Hut	Hut/Windbreak acceptance tag	No Hazardous Metals
49	1	2-74240	mit	thin gloves	No Hazardous Metals
50	1	2-74242	car 3	Type III vehicle radiological sign	No Hazardous Metals
51	1	2-74248	caution	Caution sticker	No Hazardous Metals
52	1	2-74251	pads	Sticky pads	No Hazardous Metals

DATE

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END