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RECORD GROUP 181 - 58 - 3295

SUBGROUP Mar 48 ℄

SERIES

ACCESSION

BOX 1

FOLDER Note Book #19

Decontamination Studies - Lab At 541

α-counts - (Gas. chamber -

1/16/48 -

Background - 55/900 sec -

Standard (1.35 c/s) 1238 c/900 sec -

corr. = 1183/900 = 1.316 c/s

1. 209/900 sec. or 154/900 s = .171 c/s

220/ 165/900 = .183 c/s

2. 279/900 or 224/900 = .25 c/s

3. 254/900 sec. or 199/900 = .22 c/s

α-emission not considered sufficiently high to justify study of the sample as containing radioactive Plutonium —

Absorption of Fission Product Activity by various Plastics - (20 gal./50 ml

3/23 - (Background ~~[illegible]~~

		3/25/48 (light NaOH acidified)	3/26
1. Polystyrene sheet (plastic)	pH 2.20	pH 2.45	pH 4.35
concave side	.087 c/s ± .026	.009 ± 029	.023 ± 043
convex side	.025 c/s ± .023		.030 ± 039
2. Polystyrene disc			pH 4.15
concave surface	- .069 c/s ± .046	.016 ± 028	.023 ± .03
convex	.033 ± .030		.039 ± 041
3. Al coated ē polystyrene	pH: 4.25	pH 4.35	pH 4.75
Top	- 2.81 c/s	3.26 ± .022	2.81 ± .03
bottom	3.55		3.54 ± .04
3/24.			
4. Stainless steel coated ē polystyrene	pH 2.30	pH 2.92	pH 6.0
Top	.018 ± .036	.032 ± 025	.065 ± 03
bottom	.037 ± .018	polystyrene peeled off	.055 ± 0-
5. Cellulose acetate			pH 7.2
concave	-.014 ± .029		.039 ± 024
convex	-.013 ± .016	.025 ± .031	.067 ± 019
6. Saran tubing	pH 2.20	pH 2.45	pH 3.8
concave	.009 ± .029		.055 ± .035
convex	.027 ± .042	.023 ± 027	.091 ± 023
7. Tygon tubing (flexible)			pH 3.65
concave	.017 ± .018		.000 ± 020
convex	.025 ± .026	.022 ± 028	.002 ± 024
8. Blank	pH 2.05	pH 2.40	pH 3.6

Ini. evaporated: 1.24 ± .03 50x = 62.0 c/s Total ind. after 15' shaking

Study of contamination of typical Battleship painted surfaces by the remaining F.P. activity —

Samples of steel-iron and stainless steel, about .040, 1x1 in. were prepared according to the system used below the waterline

1 coat 14A anti-corrosive prime (tan)
1 coat 14D " " (green)
1 coat 14A
1 coat 15HP red plastic, applied hot.

At the waterline a 6" strip is usually prepared — in submarines the same coating is used to prepare the entire exposed hull, very thin

A piece of steel iron prepared:

1 coat 14A
1 coat 14D
1 coat 14A
[1 coat Zn chromate on one side to account for overlap
1 coat #145 Black plastic (cold)

A piece of Aluminum (.040-.050), steel iron & stainless steel, as above, prepared as used above the waterline and for the superstructure:

2 coats Zn-chromate prime
2 coats Navy grey (flat finish, color not significant

4/7

Steel iron coated only & #145 shaken overnight in Bottle # 8:	Rusty side .142 ± .007	1 ml evap. .294 ± 011
	clean side .038 ± 011	
	Total activity in solution — 14.7 c/s	
Steel iron coated only & Navy grey shaken in Bottle # 7:	Rusty side .433 ± 020	1 ml evap: .243 ± 017
	good side .269 ± 033	
	Total activity in sol'n — 12.1 c/s	

4/15 Absorption of activity (pos. used) on untreated painted metals, final pH ÷ 3.25

		Initial c/s less Bkg (.41)	c/s after exposure	corr for Bkg (1.54 ± .05)	c/s/sqcm (per side)
Iron painted grey -					
25 x 52 mm = 8.00 cm²		.06	1.61	1.06	.133
		.01	2.795	2.20	.138
Stainless Steel - grey					
20 x 33 mm = 6.60 cm²		.02	1.575	1.02	.155
			1.278	0.74	.112
Al. grey					
26 x 26 mm	6.76 cm²	.05	1.72	1.18	.175
			2.02	1.56	.231
St. Steel - red			2.32		
18 x 31 mm	5.97 cm²	.04	2.32	1.78	.298

4/19, 4/20: Abs. of the above sol'n by painted iron samples

	Size	unexposed c/s (corr Bkg)	exposed c/s	1 hr: c/s corr Bkg	c/sqcm	exposed overnight: A. c/s (total)	c/s corr Bkg	c/s/sqcm
Red Plastic	32x28		.664					
untreated	8.96 cm²	.020	.6745 (A: 670)	.235	.023	1.123	.689	.077
Grey Paint	32x25		.666					
untreated	8.00 cm²	.075	.695 (680)	.215	.027	0.995	541	.066
Red Plastic	32x24		.696					
Dri-film	7.68 cm²		.634 (665)	.200	.026	1.219	.785	.102
Red Plastic	32x25		.650					
Dri-film	8.00 cm²		.633 (642)	.187	.022	1.267	.830	.104
Grey Paint	32x22		.558				.537	
Dri-film	7.04 cm²	.101	.621 (590)	.115	.016	0.935	[illegible]	.078
Grey Paint	32x23		.590				.497	.068
Dri-film	7.36 cm²		.593 (592)	.127	.017	0.931	[illegible]	[illegible]

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5-5-48 5 mo fem. rat — 3 Dorsal areas prepared by clipping, shaving -

	Shoulder c/s	% Rad'n corrected	Back c/s	% Rad'n corr.	Pelvic c/s	Reduction corr.	Bkg.
.025cc Sol. applied 15 min, washed - 5 t w	76		205		102		
- washed, 5 t w	37	56 %	50	75	36	65	1.5
5 t w - 23 hrs	24	36	22.5	58	23.7	36.6	1.3
2.9% citrate, 40° pH 6.5 1 - 59%	20 12.3	53	10.8	55.7	8.4	68.5	
Repeated - 34%	7.9	39.8	2.8	32.3	5.25	31.4	1.1
5/6 Overnight, no Rx	6.4 7.9		10 8.5		3.8 5.25		
5 t w -	5.1 6.6	20	5.1 6.6	27	2.6 4.1	31	1.1
Worm citrate, above	3.9 5.4	25	4.4 5.9	14	1.9 3.4	27	1.5
Worm citrate, 10%	3.2 4.7	18	3.6 5.1	18	1.4 2.9	26	1.5
.025cc added, 15 min, 26.8%							
washed 5 t w. (2K)	27.9	△	28.4	□	24.2	X	1.3
Worm citrate, 2.9 - 62%	9.9 10.9	67	12.1	59	9.1 10.6	60	
" 3 hrs	5.6 7.1	37	6.6 8.1	39	5.1 7.2	37	1.4
	4.5 6.0	20	5.8 7.3	12	4.5 6.0	21	
Worm citrate, 10%	4.3 5.8	5	5.0 6.5	11	4.1 5.6	9	
	Increase over original & final c/s —	34%		39%		185%	

5/6 Following conclusions may be drawn –

Standard procedure has been developed.

61.5 Citrate, 3-10%, pH 7, is ~ 2x as effective as soap + water in decontamination –

Soaping stand. at 1 min, 2 initial soapings before test.

Study the following for effect on decontam. + on tissue:
citrate, soap + detergent.

10 sec, 1 min 5 min applications – of citrate –
Detergent combined c̄ citrate – (+ wetting agents)

Temperature, PH, conc. of citrate.
Pressurization –

Different complexing agents – citric, Tartaric, oxalic, nitrilo triacetic.

Depilatory action...

Various other F.P. & some metals.

Try a keratin – horns, hair, hoofs for contam. c̄ F.P. & S.

5/7
5 mo. fem. rats notched middle right ear – .05 ml FP applied (as above

	Shoulder - Soap		Lumbar - 1% aerosol		Pelvic - Soap -		BKg
	Ag/s	% Decrease	Ag/s	% Decr.	A/s	% Decr	
1.	152	100	273	40	61		1.9
2.	98	36 71 65	163 60	11 100	33	46 29 54	
3.	79 80	20 152 52	99 146 53	26 273	24 73	28 61 39	1.5
4.	66 67	17 43	46 108 40	14	18 55	26 29	1.9
5.	50 51	25 33	67 93 34		14 43	24 23	
6.	2.9% citrate, 1 min		1% aerosol.		40% citrate, 1 min.		1.6
	22 - 57%		55 — 41%		8.2 - 46%		2.0

Following day citrate (40%) area showed exudation + crust, other areas slightly scaly (norm?)

Eye damaged

5/14 - Effect of PH - Rat clipped after St. - 25λ applied -

Pectoral g/s	% change	Lumbar g/s	% change	Pelvic g/s	% change
Stw. 100		76		49	
30w 45	55	36	54	22	55 %
pH 5.3		**pH 6.7**		**pH 8.1**	
60' 9.7	83%	- 11.4	71 %	- 7.3	73 %
6.5		7.4		5.3	
5.7		5.6		4.7	
5.3		4.9		4.0	

We may conclude that in the neighborhood of neutrality variation in PH has no effect on dec. rate.

5/17 - Rat #1. Effect of Conc. 25λ applied, Calif must 15 min.

Shoulder g/s	% change	Back g/s	% change
Stw - 132		152	
5tw 80	38	82	47
at 2.9%, pH 6.9		**at 1.2, pH 6.8**	
35 44	57	39	53
25 31	30	19.7	50
20 25	21	12.2	41
18.6 23	8	10.8	13
15.1	21	8.2	28
Citrate 7%		6.6	24
14.4	5		
13.5	7		
12.6	8		

21/80 = 25

12.2/8.2 = 15

5/18/48 – Rat #9 – Effect of pH – on wide range
citrate 2.9–3.0 %

	Shoulder c/s	% change	Lumbar c/s	% change	Pelvic c/s	% change	BKg
Std	158		85		95		1.7
Std	82	49	49	46%	44	55	
	pH 10.25		pH 6.9		pH 2.0		
	39	53	10	82%	7.9	85%	1.6
	9.3	82	6.8	39	5.2	44	

*Epidermis peeled after last application –

5/19 – Rat #5, 3-mo – Effect of conc. of Citrate (pH 6.9)

	Pectoral c/s	% change	Lumbar c/s	% change	Pelvic c/s	% change	BKg
Std.	65		66		55		
Std	41	48%	48	28%	28.6	47	1.6
	2.9%		10%		40%		
	18.8	56%	19.3	62	15.5	49	1.6
	10.8	46.5%	13.5	33	14.2	8.7	
	8.8	22% $\frac{8.8}{41}=21$	11.8	$\frac{11.8}{48}=25$ 15	12.0	$\frac{12}{28.6}=40$ 22	
	7.3	21%	10.2	16	11.4	5.8	1.4

Mean decontamination: 45% 31.5% 21%

152 3.0 5.3 7 7.1 10.25

Decontamination / Human Klein Sept. 9
Dave Jones & J. Mayer

Background B 1428/450

First water 25 λ 37/100 = 1593/100 = 159.3 c/m
53/100 = 166.1 c/m
70/200 = 167.6 87/300 = 164.3

First S&W
4/400 = 57.37 10/500 = 58.10
16/600 = 58.73

Second S&W
22/700 = 36.44 31/900 = 35.6
38/1100 = 36.48

Third S&W
46/1300 = 19.88 c/m
50/1500 = 19.35 c/m

Fourth S&W
54/1700 = 17.6 58/1900 = 17.3 c/m

Fifth S&W
61/000 = 18.3 63/100 17.8

Xstal 20 [illegible] /6 C M

Background in reg at 1.23 c/A
second shell 1.15 [illegible]