THE CENTER TO PROTECT WORKERS' RIGHTS

CPWR

A Comparison of Safety-and-Health Training of Painters In Alaska, Oregon, and Washington

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CPWR — the research and development arm of the Building and Construction Trades Department, — is uniquely situated to serve workers, contractors, and the scientific community. A major CPWR activity is to improve worker safety and health in the construction industry in the United States. This report is part of that effort.

Copies of this report may be obtained from Publications, The Center to Protect Workers' Rights, 8484 Georgia Avenue, Suite 1000, Silver Spring, Maryland 301-578-8500. (Report no. P1-97)

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Contents

This three-year study examined differences in training and self-protective practices between painters in Alaska subject to mandatory safety-and-health training and painters in Oregon and Washington state, where such training is voluntary. The study also examined the effects of type of work, paint application method, union status, employer size, and other employer characteristics on training and protective practices among these painters.

The Need for the Study

Construction and maintenance painters face increased rates of lung, throat, and larynx cancers, and leukemia; impaired nervous system function; kidney and liver disease; diseases of the blood or blood-forming organs; and birth defects among offspring — all of these outcomes associated with exposure to dozens of chemicals in oil-based paints and coatings (International Agency for Research on Cancer 1989). Solvents are particularly hazardous and inhalation is the primary means of painter exposures to them (Selikoff 1975 or see, for instance, Englund, Ringen, and Mehlman 1983) Thus, there is a particular need for training in the selection and use of respirators and fans.[1] Providing training for painters has been difficult, however, because of the transient, mobile nature of the work and the prevalence of small contracting companies that do not have full-time safety professionals or access to training resources.

The Alaska Model

The Alaska Hazardous Painting Certification Standard, implemented in 1988, was designed, in part, to overcome some of the difficulties associated with delivering training to the construction or maintenance painter. The Alaska law requires all painters who use organic, solvent-borne coatings to obtain an initial 16 hours of training and eight hours of refresher training every two years (painters pay a certification fee that covers course tuition and a fee paid to the state). A painter must earn a passing score of 70 on a state-approved examination at the end of each course. Employers are required to screen employees for certification for jobs using solvent-borne coatings.

The Study

Painter recruitment

Recruitment of painters for training involved three mailings in each state to targeted painters; multiple contacts by phone, mail, and personal meeting with more than 1,400 licensed contractors; mailings to more than 1,300 vendors, asking them to post notices in their paint stores; local newspaper advertisements; and, in the final phase of the training effort, mailings by unions to their members. In Alaska, Paint-Safe, a nonprofit organization in the Pacific Northwest, sent the three mailings to more than 800 painters, using the Alaska Certified Painter Registry, which is public record, to identify recipients. In Oregon and Washington, the state labor departments each sent three mailings to painters, identifying recipients from state employment records and using state envelopes; the mailings were each

[1]The importance of respirator use for painters is supported by a case-referent study of lung cancer among painters, which showed a fivefold excess risk of lung cancer for painters who did not wear a respirator. See Stockwell and Matanoski 1985.

sent to more than 1,100 painters in Oregon and more than 2,400 in Washington. The two state agencies handled the mailings to assure confidentiality of records. (The states billed Paint-Safe for postage.)

Painters who received announcements could call a toll-free number to enroll in scheduled classes. Class times and locations were flexible to accommodate recruits. Training was offered at reduced cost in Alaska and at no cost in Oregon and Washington.

Participant groups

Study participants were categorized in four groups, three for painters and one for employers. One group comprised non-union and union painters participating in mandatory certification training in Alaska between August 1994 and March 1995. This mandatory training group consisted of 128 painters applying for initial certification, eligible for renewal, or returning for renewal, plus nine painters in Oregon and Washington who were Alaska-certified and who worked sometimes in Alaska.

A second group, the voluntary training group, consisted of non-union and union painters who participated in a voluntary training program offered between August 1994 and March 1995 as part of the study in Oregon and Washington. The 231 volunteers were recruited from among workers who were employed at the time by a licensed painting contractor, had applied for state unemployment compensation in the previous three years and listed "painter" as their occupation, were self-employed as painters, or were active members of a painters' union.

Painters in the first two groups completed a pre-training baseline questionnaire, a post-training questionnaire, and a follow-up telephone interview two-to-six months 44 to 340 days after training. The Alaska state-approved painter training course was given to both training groups. In Alaska, the trainers were three apprenticeship instructors from two state-approved labor-management programs. In Oregon and Washington, one WashCOSH instructor and eight instructors from labor-management training programs served as instructors. (WashCOSH is the Washington Committee on Occupational Safety and Health, a nonprofit organization in Seattle.) All 11 instructors attended a one-week train-the-trainer orientation course to assure uniform training delivery.

The third group of painters consisted of a representative sample in each of the states who responded to a cross-sectional mail survey of all identifiable painters in 1993 and who reported working with oil-based paint in the preceding week. These 1,134 painters provided baseline comparisons with the trainees in each state (in the first two groups). In other statistical analyses, painters in this third group were combined with the trainees to increase the statistical power of the findings (thus reducing the possibility of a key type of statistical error).

Statistical analyses found the painters in all three states to be comparable in key demographic features, such as age, years in the trade, education level, and so on.

Last, 206 painting contractors in Alaska, Oregon, and Washington were surveyed in 1993. The contractors were interviewed by telephone concerning company size, type of work, paint application methods, workplace policies, and safety-and-health expenditures. The contractors had been named as employers by painters in the third group responding to the 1993 cross-sectional survey and were linked with their then-current employees for some statistical analyses.

The training

The program approved by the state of Alaska was used to train 368 painters in the three states: 128 in Alaska, 102 in Oregon, and 138 in Washington. The program focused on using respirators and fans to reduce exposures while painting. Topics included the selection and use of personal protective equipment, such as respirators and gloves; the health hazards of painting, with an emphasis on recognizing and avoiding neurotoxic signs and symptoms of exposure; how to obtain and use a material safety data sheet (MSDS); and selection and use of fans for temporary ventilation. A 7-minute video produced for the training demonstrated correct ventilation using one or two portable fans; numbers on the screen showed exposure levels and how they changed during the demonstration. Training time was split between classroom and hands-on sessions.

Surveys used

Six survey instruments were used in this study, all during the study's second and third years. (Copies of the year 3 questionnaires are in annex A.)

Survey instrument	Description
Year 2	
Painter questionnaire	Cross-sectional survey in Alaska, Oregon, and Washington; questions include type of work, application methods, contractor size, types of training (if any), years in the trade, union status, protective practices (respirators, fans, gloves, long-sleeve shirts, and so on).
Contractor questionnaire	Used with 206 contractors in Alaska, Oregon, and Washington; questions include company size, type of work, application methods, state worked in the most, training and protective-practice policies, spending for safety-and-health and production equipment, and attitudes, beliefs, and knowledge.
Year 3	
Painter demographic/behavioral questionnaire	Pre-training; selection of questions from the year 2 painter survey questionnaire.
Painter reading-level test	Pre-training; SelectABLE, standardized reading test (Harcourt Brace Jovanovich), which groups trainees into three levels.
Knowledge test	Pre- and post-training; questions from the Alaska certi- fication exam on health hazards of painting, reading and understanding material safety data sheets, and respirator and fan use.
Painter follow-up telephone survey	Given 44 to 340 days after training (an average of 180 days after); selected questions from the demographic/behavioral questionnaire (see above, this chart), used as baseline for nontrainees and as follow-up for trainees.

In year 2 of the study, researchers at the University of Washington compared surreptitious observations of painter work practices with self-reporting by the same painters on mailed questionnaires two to three weeks later. The comparison showed that the observations and the self-reports were in substantial agreement, beyond what would be expected by chance. The results indicated that painters' self-reports could be relied upon in the study. Questions from the validated questionnaire continued to be used in all subsequent painter questionnaires for years 2 and 3 **(**Keiffer and others 1996).

Painters were grouped for statistical comparisons, based on information obtained from the demographic, knowledge-test, and contractor surveys. Self-reported protective practices related to respirator and fan use — reported by painters on the questionnaire — were the primary dependent variables used in the analysis to determine training effectiveness.

Results

The findings presented here cover the effectiveness of training on self-protective behaviors, the effectiveness of mandatory training in reaching painters most in need of training, and the cost-effectiveness of a mandatory system (Selected data are presented in tables in annex B).[2]

First, when data from the three painter groups were pooled, painters with previous Alaska state certification training were 2.7 times more likely to wear respirators than were painters who had not had training (Odds ratios 95% CI=1.95 to 3.81; p=.00000). Fan use was 1.65 times greater among painters who had Alaska state certification training than among painters who had not had training (Odds ratios 95% CI=1.22 to 2.23; p=.00120). Analysis of survey responses also showed that most other types of training — not provided in this study — from hazard communication to lead abatement, also increased the odds of painters wearing respirators or using fans.

Second, compared with voluntary training programs, Alaska's mandatory system tends to reach untrained painters, particularly those at higher risk of exposures to oil-based paints.

- Mandatory training increased the likelihood that a painter had been trained. Statistically, it was much more likely that painters in Alaska would have been trained previously, compared with painters in Oregon and Washington. For instance, painters in Alaska were 6.9 times more likely to have completed a combination of courses in respirator wear, ventilation, and health hazard recognition than were painters in Oregon and Washington (Odds ratios 95% CI=5.13 to 9.28; p=.00000). Painters in Alaska were five times more likely to have had *any* given safety-and-health training than were painters in Oregon and Washington, states where safety-and-health training is voluntary.

- Mandatory training reached untrained painters, while voluntary training largely attracted those who had already been trained. For instance, 82% of those in the voluntary training group in Oregon and 78% in Washington reported previous respirator training compared with only 39 and 31%, respectively, of the baseline survey groups in those states (Group T-tests p=.000). Further, 69% of the voluntary training group in Oregon and 67% in Washington reported previous ventilation training compared with only 24 and 19%, respectively, in the baseline survey groups in those states (Group T-tests p=.000). Painters with the least previous training tended not to attend training under the voluntary system.

The results just described for Oregon and Washington contrast with findings for the Alaska mandatory training group whose responses did not differ significantly from those of the Alaska baseline survey group in that state. For instance, 78% of those in the mandatory training group in Alaska had previous respirator training compared with 83% in the baseline group in that state

[2]Other results of the study not presented here include pre- and post-training comparisons of knowledge and protective practices among the study trainees and evaluations of training features, the validity and reliability of the Alaska Certification Examination, and the relationship between a contractor's size and policy and painters' protective practices.

(Group T-tests p=.264). Further, 65% of the mandatory training group had had previous ventilation training compared with 75% of the baseline group in Alaska (Group T-tests p=.064).

• Mandatory training was more effective than voluntary training in attracting non-union painters. Non-union painters were less likely to have had previous training, but were more likely to have higher risks of toxic exposures. Non-union painters in all three states were only about one-third (0.360 times) as likely as union painters to have received prior training (Odds ratio 95% CI=0.28 to 0.46, p=.00000). In the mandatory training group, the odds that a trained painter was not a union member were about 2.79 (Odds ratio 95% CI=1.78 to 4.36, p=.00000), roughly comparable to the 78% non-union prevalence in Alaska. But, in the voluntary training group, the odds that a trained painter was not a union member were 0.39 in Oregon and 0.12 in Washington compared with the baseline groups for those states (Odds ratio 95% CI=.22 to .72, p=.00000; odds ratio 95% CI=.07 to 0.20, p=.00000). Yet non-union painters may have the greater exposure risk. For instance, non-union painters were 1.73 times more likely than union painters to spray oil-based paint (Odds ratio 95% CI=1.34 to 2.22, p=.00002).

• Mandatory training was also more effective than voluntary training in reaching painters working for small contracting companies, those having fewer than four employees. Painters working for small companies were only half as likely to have had previous safety-and-health training (Odds ratio 95% CI=0.34 to 0.69, p=.0004). Yet they are at greater risk of exposure than other painters, being 1.46 times more likely to spray oil-based paints than painters working for medium and large companies (Odds ratio 95% CI=1.01 to 2.11; p=.04511). With mandatory training in Alaska, painters working for small companies are 1.8 times *more* likely to participate in training than other painters (Odds ratio 95% CI=1.10 to 3.09; p=.02056), whereas painters working for small companies are only three-fifths (0.6 times) as likely to participate in training in Oregon (Odds ratio 95% CI=0.28 to 1.26; p=.17381) and one-fourth (0.25) as likely in Washington (Odds ratio 95% CI=0.13 to 0.44; p=.00000).

Third, lower recruitment costs suggest that mandatory training is more cost-effective than voluntary training. Recruitment costs were 10 times lower and participation rates were 10 times higher for the mandatory training in Alaska than for the voluntary training in Oregon and Washington. Under the mandatory training program, the cost of recruiting trainees during the study period was about $8 per trainee with a participation rate exceeding 80% of the eligible painters.[3] Under the voluntary training program in Oregon and Washington, the costs for recruiting trainees ranged from $79 to $109 per trainee with participation rates of 6 to 8%.

Last, the research found that Alaska's mandatory training requirement did not elevate employers' safety-and-health expenditures, compared with expenditures in Oregon and Washington. The survey of 206 contracting companies in the three states found that average annual expenditures in Alaska were $532 per painter compared with $1,108 in Oregon and $880 in Washington (Anova p=.0001). (In Alaska, some of the training costs are borne by workers, who pay $100 every two years for certification, which includes training.) So, while painters in Alaska were better protected, being more likely to wear

[3]The State of Alaska notified painters and contractors of the requirements of the certification regulation in 1989. Notification and other administrative aspects of the regulation were funded entirely through fees collected from painters, with fees reimbursing expenses retroactively in the first three years. Since 1989, training providers have taken over notification as part of marketing. The state uses its share of the certification fees to help support its general safety-and-health program, which enforces the regulation through means such as state OSHA inspectors.

respirators and use fans, contractors in Alaska spent less per painter on safety-and-health equipment and training than did contractors in Oregon and Washington.

Conclusions

This study has demonstrated the following:

- Safety-and-health training improves painters' self-protective behaviors, such as respirator and fan use. Trained workers appear to better protect themselves from exposures to toxic substances, thus reducing the risks to themselves and their offspring of serious and costly long-term work-related health effects.

- Mandatory training is more effective than voluntary training in improving self-protective behaviors overall and in reaching a wide range of painters, regardless of previous training, union status, or company size. Voluntary training tends to draw mainly "true believers" — workers with previous training, better protective practices, and lower exposure risks.

- A mandatory system costs less for recruitment and produces much higher participation rates.

- Under Alaska's mandatory training system, employers appear to spend less per worker on safety-and-health supplies and training. This issue warrants further investigation.

Although this study covers only a six-year period, the authors believe the findings about worker self-protective practices will continue to apply for the longer term.

The findings have clear implications for efforts to provide training or improve safety and health for painters and other construction workers. The key lesson is that the construction industry, employees, and society can benefit substantially — in terms of costs and worker quality of life — from a well-designed government-mandated safety-and-health certification training program.

* * *

This report is the first of a planned series based on the three-year study.

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Annex B. Selected Tables

B-1. PRE-TRAINING RESPIRATOR USE FOR WORK WITH OIL-BASED PAINTS AND COATINGS BY PREVIOUS TRAINING - CROSSTABS YR03 TRAINEES [PRE-TRNG] AND YR03 NON-TRAINED AND YR02 SURVEY RESPONDENTS

PREVIOUS TRAINING (YES/NO)	PRE-TRAINING RESPIRATOR USE (YES/NO) ODDS RATIO	95% CONFIDENCE INTERVAL	CHI-SQUARE PEAR / LR	N= YES/NO
AK CERT TRNG(1) AK CERT=YES NO TRNG=NO	2.72683	1.95028- 3.81257	.00000*/.00000*	323/ 415
OTHER TRNG(2) OTHR TR=YES NO TRNG=NO				
RESPIR SELECT	1.37085	1.02612- 1.83139	.03259*/.03240*	385/ 412
VENTILATION TR	1.51026	1.09239- 2.08798	.01239*/.01196*	272/ 412
HEALTH HZD PTG	1.39091	1.01873- 1.89906	.03754*/.03698*	300/ 412
ASBESTOS ABATE	1.47612	0.92975- 2.34356	.09749 /.09400	102/ 412
LEAD ABATEMENT	1.47417	1.03528- 2.09912	.03096*/.02987*	207/ 412
HAZ COM TRNG	1.50461	1.07355- 2.10876	.01740*/.01674*	239/ 412
MSDS TRAINING	1.32800	0.99198- 1.77784	.05642 /.05614	371/ 412
EMP INITIAL TR	1.59287	1.14397- 2.21792	.00571*/.00564*	307/ 307
ANY H&S TRG	1.39074	1.06080- 1.82330	.01683*/.01690*	496/ 415
RSP+VNT+HZDS	1.33138	1.01258- 1.75057	.04020*/.03994*	421/ 477
VOC TRG Y/N (3)	0.94849	0.68481- 1.31371	.75034 /.75033	314/ 298
APPR TRG Y/N(3)	1.45285	1.03449- 2.04041	.03079*/.03020*	249/ 352

EMP INITIAL TRG, VOC TRG, and APPR TRG include year 03 non-trained follow up group.

(1) Compares respirator wear between all AK-certified painters and all painters with no previous training in the three states.

(2) Compares respirator wear between all painters with each type of other training and all painters with no previous training in the three states.

(3) Compares respirator wear between all painters with apprentice or vocational training and all painters without in the three states.

B-2. PRE-TRAINING FAN USE FOR WORK WITH OIL-BASED PAINTS AND COATINGS BY PREVIOUS TRAINING - CROSSTABS YR03 TRAINEES [PRE-TRNG] AND YR03 NON-TRAINED AND YR02 SURVEY RESPONDENTS

PREVIOUS TRAINING (YES/NO)	PRE-TRAINING FAN USE (YES/NO) ODDS RATIO	95% CONFIDENCE INTERVAL	CHI-SQUARE PEAR / LR	N= YES/NO
AK CERT TRG(1) AK CERT=YES NO TRNG=NO	1.64784	1.21664- 2.23186	.00120*/.00123*	328/ 427
OTHER TRNG(2) OTHR TR=YES NO P TR=NO				
RESPIR SELECT	1.67174	1.25084- 2.23428	.00049*/.00049*	394/ 424
VENTILATION TR	1.84476	1.34616- 2.52802	.00013*/.00014*	282/ 424
HEALTH HZD PTG	1.80077	1.32326- 2.45059	.00017*/.00018*	307/ 424
ASBESTOS ABATE	2.46588	1.59440- 3.81369	.00004*/.00005*	105/ 424
LEAD ABATEMENT	1.83951	1.30608- 2.59081	.00045*/.00050*	213/ 424
HAZ COM TRNG	1.91094	1.37808- 2.64983	.00009*/.00010*	247/ 424
MSDS TRAINING	1.64132	1.22488- 2.29936	.00087*/.00087*	381/ 424
EMP INITIAL TR	1.72727	1.24155- 2.40302	.00113*/.00110*	320/ 312
ANY H&S TRG	1.49380	1.13559- 1.96501	.00403*/.00392*	513/ 427
RSP+VNT+HZDS	1.66826	1.26804- 2.19480	.00024*/.00025*	417/ 507
VOC TRG Y/N (3)	1.57227	1.12450- 2.19835	.00796*/.00784*	320/ 309
APPR TRG Y/N(3)	1.84343	1.35534- 2.50730	.00009*/.00009*	344/ 385

EMP INITIAL TRG, VOC TRG, and APPR TRG include year 03 non-trained follow up group.
(1) Compares respirator wear between all AK-certified painters and all painters with no previous training in the three states.
(2) Compares respirator wear between all painters with each type of other training and all painters with no previous training in the three states.
(3) Compares respirator wear between all painters with apprentice or vocational training and all painters without in the three states.

B-3. PREVIOUS TRAINING BY STATE - CROSSTABS YR03 TRAINEES [PRE-TRAINING] AND YR02 SURVEY RESPONDENTS

	PARTICIPANT STATE (ALASKA VS WASHINGTON-OREGON)			
PREVIOUS TRG (YES/NO)	ODDS RATIO	95% CONFIDENCE INTERVAL	CHI-SQUARE PEAR / LR	N= AK/WA-OR
RESP SELECT TR	6.17889	4.68627- 8.14691	.00000*/.00000*	420/958
VENTILATION TR	6.48003	5.01414- 8.37448	.00000*/.00000*	420/958
HLTH HZDS PTG	6.66549	5.13098- 8.65891	.00000*/.00000*	420/958
HAZ COM TRG	3.47119	2.72720- 4.41815	.00000*/.00000*	420/958
MSDS TRAINING	5.14313	3.94991- 6.69681	.00000*/.00000*	420/958
EMP INITIAL TR	1.37142	1.07902- 1.74305	.00972*/.01001*	392/933
ASBESTOS AB TR	1.94785	1.41011- 2.69063	.00004*/.00007*	420/958
LEAD ABTMNT TR	1.04897	0.79736- 1.37999	.73528 /.73302	420/958
ANY H&S TRG	5.34615	3.94481- 7.24529	.00000*/.00000*	421/992
RSP+VNT+HZDS	6.89969	5.12917- 9.28137	.00000*/.00000*	420/958
VOC TRG Y/N	0.85189	0.66814- 1.08617	.19575 /.19410	425/996
APPR TRG Y/N	1.13605	0.88015- 1.46634	.32714 /.32903	425/996

EMP INITIAL TR, VOC TRG, APPR TRG include year 03 non-trained follow up group.

B-4. PREVIOUS TRAINING BY PARTICIPANT GROUP STATUS - GROUP T-TESTS YR03 TRAINEES [PRE-TRAINING] VERSUS YR02 SURVEY RESPONDENTS

PREVIOUS TRAINING BY STATE	PARTICIPANT GROUP (YR03 TRNS/YR02 SRVY) YR03 TRNS	YR02 SRVY	SIG.	N= TRN/SUR
AK ALASKA CERT TRG Y/N (Mean)	.39	.94	.000*	104/ 284
WA ALASKA CERT TRG Y/N (Mean)	.02	.02	.845	99/ 383
OR ALASKA CERT TRG Y/N (Mean)	.04	.03	.521	72/ 294
AK RESP SELECT TRG Y/N (Mean)	.78	.83	.264	104/ 284
WA RESP SELECT TRG Y/N (Mean)	.78	.31	.000*	99/ 383
OR RESP SELECT TRG Y/N (Mean)	.82	.39	.000*	72/ 294
AK VENTILATION TRNG Y/N (Mean)	.65	.75	.064	104/ 284
WA VENTILATION TRNG Y/N (Mean)	.67	.19	.000*	99/ 383
OR VENTILATION TRNG Y/N (Mean)	.69	.24	.000*	72/ 294

B-5. PREVIOUS TRAINING BY UNION STATUS - CROSSTABS FOR WORK WITH OIL-BASED PAINTS AND COATINGS YR03 TRAINEES [PRE-TRAINING] AND YR02 SURVEY RESPONDENTS

PREVIOUS TRAINING (YES/NO)	UNION STATUS (NO/YES) ODDS RATIO	95% CONFIDENCE INTERVAL	CHI-SQUARE PEAR / LR	N= YES/NO
ANY H&S TRG	0.35974	0.28239- 0.45827	.00000*/.00000*	590/646

B-6. RELATIVE RISKS - PAINT APPLICATION BY UNION STATUS FOR WORK WITH OIL-BASED PAINTS AND COATINGS YR03 TRAINEES [PRE-TRAINING] AND YR02 SURVEY RESPONDENTS

	UNION STATUS (NO/YES) ODDS RATIO	95% CONFIDENCE INTERVAL	CHI-SQUARE PEAR / LR	N= YES/NO
APPLICATION:				
SPRAY	1.72604	1.34021- 2.22291	.00002*/.00002*	590/646
ROLL	1.09615	0.85513- 1.40510	.46857 /.46841	590/645
BRUSH	1.07290	0.74519- 1.37678	.93473 /.93472	589/646

B-7: RELATIVE RISKS - UNION STATUS BY PARTICIPANT GROUP STATUS YR03 TRAINEES [PRE-TRAINING] AND YR02 SURVEY RESPONDENTS

NON-UNION STATUS BY STATE	PARTICIPANT GROUP STATUS (YR03 TRNG PARTICIPANTS/YR02 SURVEY RSPNDS) ODDS RATIO	95% CONFIDENCE INTERVAL	CHI-SQUARE PEAR / LR	N= TRN/SUR
AK UNION STAT	2.78629	1.78202- 4.35653	.00000*/.00000*	137/311
WA UNION STAT	0.12146	0.07434- 0.19846	.00000*/.00000*	132/427
OR UNION STAT	0.39695	0.21803- 0.72272	.00197*/.00124*	97/317

B-8. RELATIVE RISKS - COMPANY SIZE BY ANY H&S TRAINING FOR WORK WITH OIL-BASED PAINTS AND COATINGS YR03 TRAINING PRTCPNTS [PRE-TRAINING] AND YR02 SURVEY RESPONDENTS

	ANY PREVIOUS H&S TRAINING (YES/NO)			
	ODDS RATIO	95% CONFIDENCE INTERVAL	CHI-SQUARE PEAR / LR	N= YES/NO
COMPANY SIZE:				
SM 1-4 PTRS	0.48255	0.33901- 0.68687	.00004*/.00006*	477/199
MD 5-9 PTRS	1.36606	0.91284- 2.04428	.12847 /.12393	477/199
LG 10+ PTRS	1.50633	1.07707- 2.10667	.01638*/.01608*	477/199

B-9. RELATIVE RISKS - COMPANY SIZE BY SPRAY OIL FOR WORK WITH OIL-BASED PAINTS AND COATINGS YR03 TRAINEES [PRE-TRAINING] AND YR02 SURVEY RESPONDENTS

	SPRAY OIL-BASED PAINT (YES/NO)			
	ODDS RATIO	95% CONFIDENCE INTERVAL	CHI-SQUARE PEAR / LR	N= YES/NO
COMPANY SIZE:				
SM 1-4 PTRS	1.45945	1.00716- 2.11486	.04511*/.04281*	460/216
MD 5-9 PTRS	1.29621	0.87787- 1.91390	.19125 /.18739	460/216
LG 10+ PTRS	0.61538	0.44437- 0.85221	.00336*/.00336*	460/216

B-10. RELATIVE RISKS - COMPANY SIZE BY PARTICIPANT GROUP STATUS YR03 TRAINEES [PRE-TRAINING] AND YR02 SURVEY RESPONDENTS

	PARTICIPANT GROUP STATUS (YR03 TRNG PARTICIPANTS/YR02 SURVEY RSPNDS)			
COMPANY SIZE SM=1-4 PTRS MD=5-9 PTRS LG=10+ PTRS	ODDS RATIO	95% CONFIDENCE INTERVAL	CHI-SQUARE PEAR / LR	N= TRN/SUR
AK SMALL CNTR	1.84149	1.09591- 3.09432	.02056*/.02021*	126/118
WA SMALL CNTR	0.23843	0.12946- 0.43912	.00000*/.00000*	124/167
OR SMALL CNTR	0.59919	0.28488- 1.26026	.17381 /.16577	93/164
AK MEDIUM CNTR	0.75392	0.44335- 1.28203	.29652 /.29650	126/118
WA MEDIUM CNTR	1.31960	0.76683- 2.27083	.31595 /.31733	124/167
OR MEDIUM CNTR	0.95623	0.44968- 2.03339	.90743 /.90729	93/164
AK LARGE CNTR	0.64675	0.36189- 1.15584	.13991 /.13970	126/118
WA LARGE CNTR	2.28450	1.42108- 3.67250	.00059*/.00056*	124/167
OR LARGE CNTR	1.41304	0.79551- 2.50995	.23714 /.23358	93/164

B-11. COST COMPARISONS THREE-STATE PAINTERS STUDY

COMPARISON OF RECRUITMENT COSTS AND RESPONSE RATES BY STATE
ALASKA, WASHINGTON, OREGON

STATE	MAIL TTL	CERT ELIG	ATTENDED TRNG PREV CERT	ATTENDED TRNG OTHER	COST PER TRAINEE*	RESPONSE PERCENT	MEAN RANK TEST P=
AK	891	55	40	88	$8 ($42)	80% + 88 new	.0000
WA	2485	2485	-	138	$109	6%	
OR	1355	1355	-	102	$79	8%	

* $6/ELIGIBLE PAINTER

B-12. CONTRACTOR EXPENDITURES PER PAINTER FOR HEALTH & SAFETY* BY STATE ANOVA YR02 CONTRACTOR SURVEY

STATE	MEANS	95% CONFIDENCE INTERVAL	Prob.	N=
MEAN EXPENDITURES				
ALASKA	$532	$420 - $644	.0001*	110
WASHINGTON	$880	$711 - $1,048		296
OREGON	$1,108	$894 - $1,323		164

*HEALTH & SAFETY = COSTS PER PAINTER FOR EQUIPMENT -- SUCH AS RESPIRATORS, GLOVES, HARD HATS -- AND FOR H&S TRAINING EACH YEAR.

The Paint-Safe Consortium

Northwest Conference of Painters
International Brotherhood of Painters & Allied Trades
Seattle

Northwest Center for Occupational Health & Safety
University of Washington
Seattle

Paint-Safe
Seattle

Occupational Health Foundation
Washington, D.C.

FOF Communications
Washington, D.C.