

**NOES QUESTIONNAIRE ITEM NO. 45  
Plants Which Recirculate Exhaust Air**

**Intent**

The intent of this question was to determine whether a plant recirculated exhaust air.

This item was displayed on the questionnaire as:

45. Does this facility recirculate exhaust air from any process or plant area?

- 1 Yes
- 2 No (Skip to Question 47)

**Notes**

Recirculation of exhaust air was considered to be the capture of exhaust air from a process or work area, and re-introduction of that air back into the facility, usually following treatment to remove contaminants.

Standard heating or cooling systems were not considered to recirculate exhaust air.

Catalytic converters or scrubbing devices attached to the exhausts of stationary or mobile internal combustion engines within the plant were not considered recirculation systems.

**Analysis**

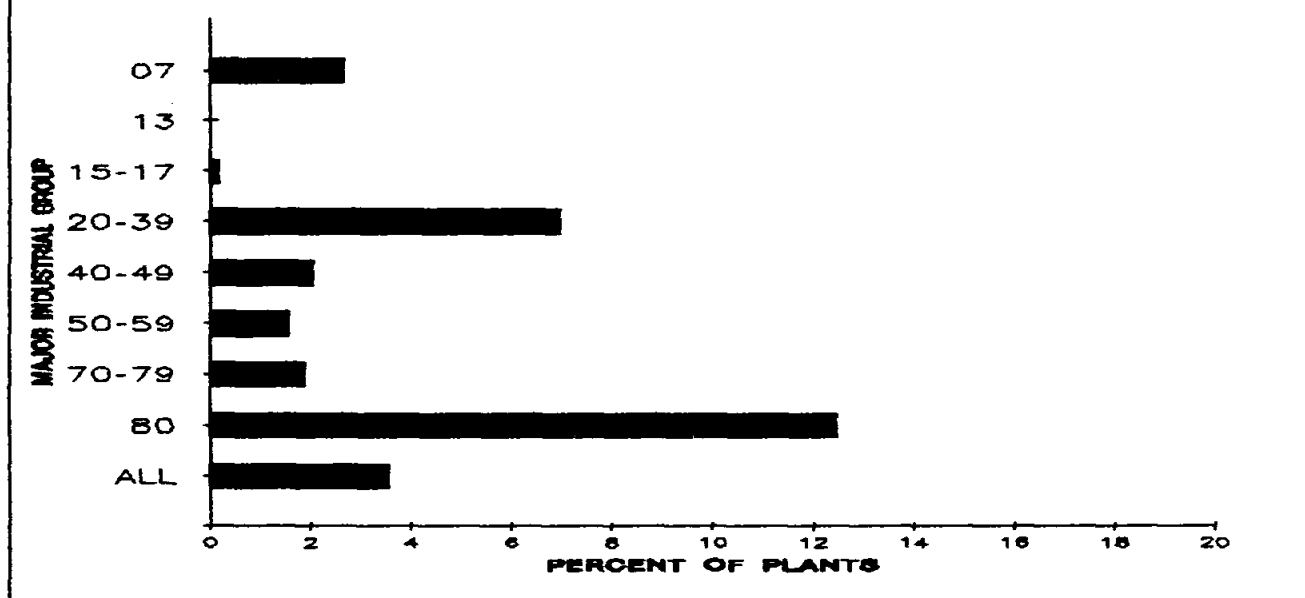
One analysis of the response to question 45 is presented.

Response 45.1 - Exhaust air from the facility recirculated

The estimates of the plants which recirculate exhaust air from a process or work area back into the facility, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-75, IV-76, and IV-77, and Tables IV-7 and IV-58.

Figure IV-75	Plants which recirculate exhaust air (by major industrial group)
Figure IV-76	Plants which recirculate exhaust air (by 2-digit SIC)
Figure IV-77	Plants recirculating exhaust air
Table IV-57	Number and percent of plants and employees in plants which recirculate exhaust air from within the plant (by major industrial group)
Table IV-58	Number and percent of plants and employees in plants which recirculate exhaust air from within the plant (by 2-digit SIC)

**FIGURE IV - 75**  
**PLANTS WHICH RECIRCULATE EXHAUST AIR**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-57

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 RECIRCULATE EXHAUST AIR FROM WITHIN THE PLANT

MAJOR GROUP	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	151* (191) 2.7%	...	...	151* (191) 2.7%	10241* (12985) 9.9%	...	...	10241* (12985) 9.3%
13	...	...	...	...	...	...	...	...
15-17	204* (174) .2%	33* (42) .8%	5* (5) 2.1%	243* (173) .2%	6131* (5220) .3%	5063* (5111) .7%	20157* (21701) 8.5%	31351* (24105) 1.0%
20-39	8275 (1368) 5.4%	3551 (460) 11.2%	1532 (142) 24.4%	13358 (1618) 7.0%	290048 (42750) 6.3%	839713 (98771) 13.2%	2813432 (215319) 34.0%	3943193 (268723) 20.5%
40-49	1042* (387) 2.0%	207* (170) 3.5%	21* (16) 4.4%	1269* (439) 2.1%	50357* (18634) 3.5%	35306* (24376) 3.1%	106224* (71433) 18.5%	191888* (79737) 6.1%
50-59	845* (616) 1.4%	102* (109) 3.8%	...	947* (605) 1.6%	13190* (8168) 1.2%	12776* (13634) 3.1%	...	25966* (14628) 1.7%
70-79	1447* (762) 2.0%	...	20* (16) 5.6%	1466* (756) 1.9%	24518* (12973) 1.8%	...	63584* (60307) 18.7%	88101* (58147) 4.0%
80	386* (318) 13.6%	184* (87) 8.5%	311* (104) 15.1%	881* (343) 12.5%	9100* (6238) 9.0%	51407* (25201) 9.6%	442053* (139461) 14.6%	502561* (136275) 13.7%
ALL	12349 (1775) 2.7%	4077 (512) 8.2%	1888 (177) 20.0%	18315 (1983) 3.6%	403584 (51426) 3.6%	944265 (105816) 9.6%	3445451 (273902) 27.6%	4793300 (318568) 14.3%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

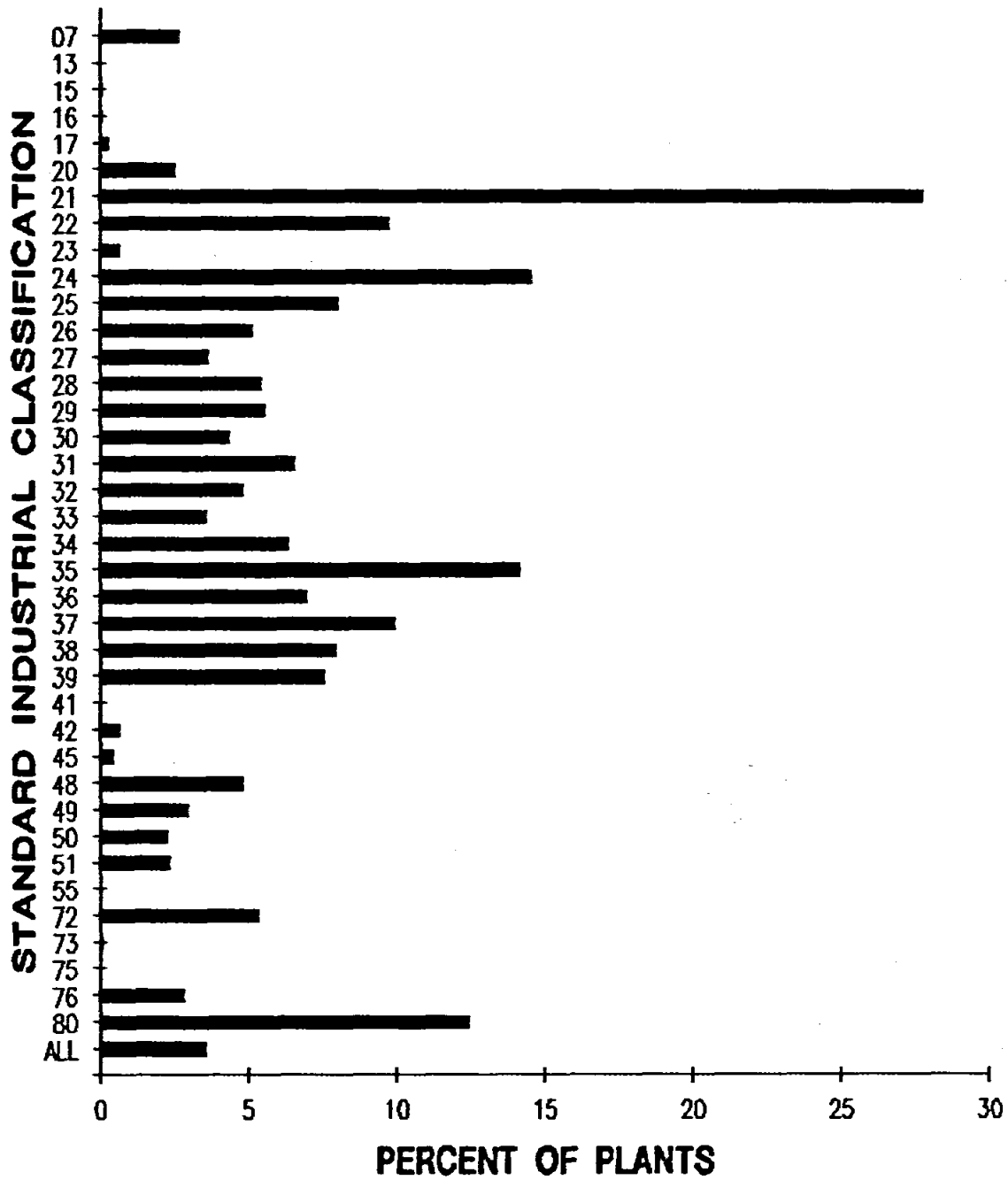
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH RECIRCULATE EXHAUST AIR FROM WITHIN THE PLANT

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	151* (191) 2.7%	...	...	151* (191) 2.7%	10241* (12985) 9.9%	...	...	10241* (12985) 9.3%
13	...	...	...	...	...	...	...	...
15	...	16* (14) 1.4%	5* (5) 3.7%	21* (15) .7%	...	3106* (2726) 1.6%	20157* (21701) 15.0%	23263* (22293) 2.6%
16	...	18* (40) 1.6%	...	18* (40) .7%	...	1958* (4440) .9%	...	1958* (4440) .3%
17	204* (174) .4%	...	...	204* (174) .3%	6131* (5220) .5%	...	...	6131* (5220) .4%
20	...	332* (137) 10.3%	65* (36) 11.7%	397* (145) 2.6%	...	80797* (39395) 12.0%	78452* (54237) 16.0%	159249* (71134) 10.2%
21	...	...	30* (56) 38.3%	30* (56) 27.8%	...	...	43486* (35484) 38.8%	43486* (35484) 38.1%
22	134* (167) 4.6%	276* (133) 17.4%	64* (48) 21.4%	474* (195) 9.8%	3218* (4005) 3.0%	76875* (37812) 22.1%	87416* (70827) 33.5%	167509* (71309) 23.5%
23	...	64* (46) 2.1%	47* (41) 19.4%	111* (77) .7%	...	18912* (13600) 3.1%	47062* (40984) 22.6%	65974* (49731) 5.3%
24	1380* (609) 12.9%	283* (125) 24.7%	85* (73) 82.1%	1749* (624) 14.6%	55435* (20843) 18.3%	63127* (28032) 34.4%	56588* (48232) 61.3%	175150* (76542) 30.2%
25	268* (129) 6.4%	148* (66) 13.9%	19* (15) 15.9%	435* (159) 8.1%	9529* (5161) 6.8%	52092* (23436) 20.3%	38134* (22387) 31.0%	99756* (32895) 19.2%
26	52* (70) 1.3%	186* (110) 11.9%	67* (55) 31.3%	306* (130) 5.2%	5195* (6955) 3.8%	20957* (12625) 7.4%	81466* (61087) 39.4%	107618* (58542) 17.2%
27	480* (268) 2.6%	226* (101) 12.1%	52* (38) 16.4%	758* (301) 3.7%	20240* (9922) 4.2%	68703* (31478) 19.0%	50621* (38624) 14.6%	139565* (56390) 11.8%
28	279* (140) 4.5%	81* (46) 7.0%	67* (40) 17.6%	428* (156) 5.5%	9771* (5287) 5.4%	32179* (18188) 12.3%	168721* (79531) 35.4%	210671* (77803) 23.0%
29	...	26* (35) 9.0%	53* (37) 52.0%	79* (52) 5.6%	...	4750* (6386) 7.5%	49608* (56454) 42.2%	54358* (57856) 24.5%
30	222* (121) 3.3%	61* (63) 4.0%	93* (73) 41.4%	376* (126) 4.4%	12433* (7172) 5.5%	12345* (12003) 4.2%	81772* (66697) 35.0%	106550* (67483) 14.1%
31	...	101* (57) 17.8%	...	101* (57) 6.6%	...	23806* (13298) 17.6%	...	23806* (13298) 13.5%
32	289* (287) 3.3%	151* (88) 14.9%	46* (29) 25.2%	487* (340) 4.9%	12458* (11281) 5.3%	50395* (29280) 24.1%	39389* (25098) 30.5%	102242* (41364) 17.8%
33	63* (64) 1.5%	117* (72) 8.0%	34* (21) 10.0%	214* (82) 3.6%	1390* (1402) 1.0%	40367* (21685) 13.0%	74961* (47839) 12.1%	116718* (48820) 10.9%

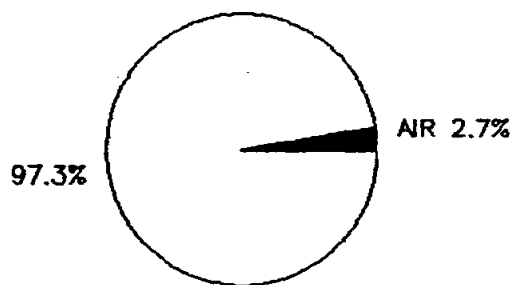
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (>500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (>500)	TOTAL
34	877* (358) 4.7%	419* (111) 13.4%	103* (68) 29.7%	1399* (414) 6.4%	36619* (10949) 6.6%	79342* (20014) 13.3%	124038* (89798) 35.3%	239999* (93351) 16.0%
35	3173* (851) 14.0%	424* (113) 12.4%	213 (41) 27.1%	3810 (856) 14.2%	86211 (15925) 14.2%	79077* (26443) 12.0%	380778 (58454) 34.2%	546066 (63662) 22.9%
36	134* (167) 1.9%	376* (140) 14.0%	235* (83) 29.8%	745* (246) 7.0%	3630* (4522) 1.6%	72534* (23204) 13.1%	383786* (106102) 32.5%	459950 (104480) 23.4%
37	280* (176) 7.1%	133* (110) 11.2%	143 (33) 34.3%	556* (214) 10.0%	13749* (8929) 10.8%	39389* (30774) 16.5%	833007 (203140) 55.0%	886145 (208854) 47.1%
38	178* (121) 6.6%	54* (30) 5.7%	91* (79) 21.8%	323* (153) 8.0%	8964* (5696) 8.6%	10091* (6576) 5.2%	160149* (119572) 34.8%	179204* (120131) 23.6%
39	462* (282) 7.1%	94* (224) 11.8%	26* (19) 7.7%	582* (373) 7.6%	11206* (4946) 6.8%	13975* (29135) 9.4%	33998* (22428) 16.2%	59178* (38477) 11.3%
41	...	...	...	...	...	...	...	...
42	137* (93) .7%	16* (16) 1.1%	...	153* (94) .7%	5096* (3941) 1.0%	6910* (6767) 2.7%	...	12005* (7797) 1.5%
45	...	...	21* (16) 14.0%	21* (16) .5%	...	...	106224* (71433) 40.2%	106224* (71433) 23.5%
48	762* (487) 5.2%	...	...	762* (487) 4.9%	36719* (23341) 8.6%	...	...	36719* (23341) 5.5%
49	142* (126) 1.7%	164* (165) 8.8%	...	306* (198) 3.0%	8543* (7579) 3.2%	20766* (20968) 4.9%	...	29308* (21606) 3.5%
50	624* (541) 2.1%	102* (109) 5.7%	...	726* (533) 2.3%	9874* (7416) 1.6%	12776* (13634) 4.5%	...	22650* (14504) 2.5%
51	221* (223) 2.4%	...	...	221* (223) 2.4%	3316* (3348) 1.8%	...	...	3316* (3348) 1.6%
55	...	...	...	...	...	...	...	...
72	1157* (759) 5.6%	...	...	1157* (759) 5.4%	19007* (12561) 5.0%	...	...	19007* (12561) 4.0%
73	...	...	20* (16) 5.8%	20* (16) .1%	...	...	63584* (60307) 19.3%	63584* (60307) 5.8%
75	...	...	...	...	...	...	...	...
76	290* (417) 3.0%	...	...	290* (417) 2.9%	5511* (7915) 3.1%	...	...	5511* (7915) 2.7%
80	386* (318) 13.6%	184* (87) 8.5%	311* (104) 15.1%	881* (343) 12.5%	9100* (6238) 9.0%	51407* (25201) 9.6%	442053* (139461) 14.6%	502561* (136275) 13.7%
ALL	12349 (1795) 2.8%	4050 (442) 8.2%	1888 (206) 20.0%	18288 (1970) 3.6%	403584 (54700) 3.7%	936634 (97512) 9.6%	3445451 (306250) 27.7%	4785670 (361267) 14.4%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

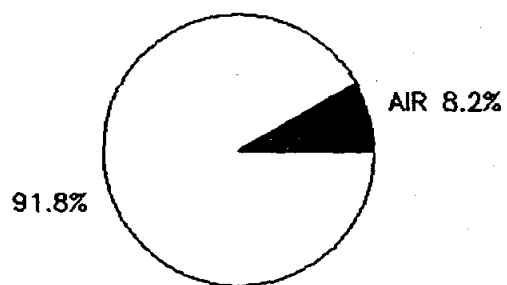
**FIGURE IV - 76**  
**PLANTS WHICH RECIRCULATE EXHAUST AIR**  
 (NOES 1981-1983)



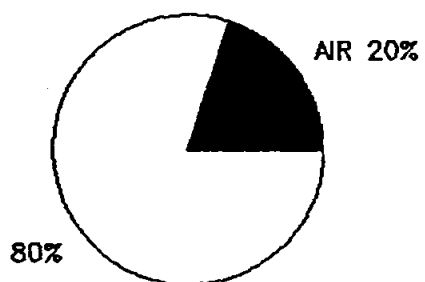
**FIGURE IV - 77**  
**PLANTS RECIRCULATING EXHAUST AIR**  
**(NOES 1981-1983)**



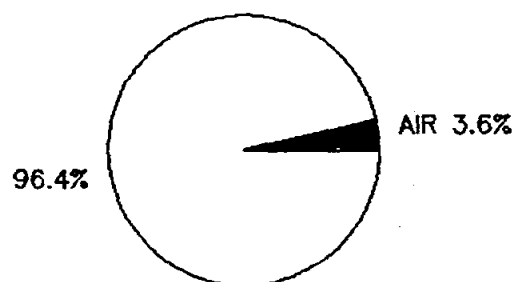
SMALL



MEDIUM



LARGE



ALL

**NOES QUESTIONNAIRE ITEM NO. 46**  
**Areas of the Facility Involved in Recirculation of Exhaust Air**

**Intent**

The intent of this question was to determine which areas of the facility provided or received exhaust air.

This item was displayed on the questionnaire as:

46. What processes or areas are involved?

\_\_\_\_\_

\_\_\_\_\_

**Notes**

No analysis of this question was done for this publication.

This is because the responses were recorded as free text and could not readily be encoded for computer processing.

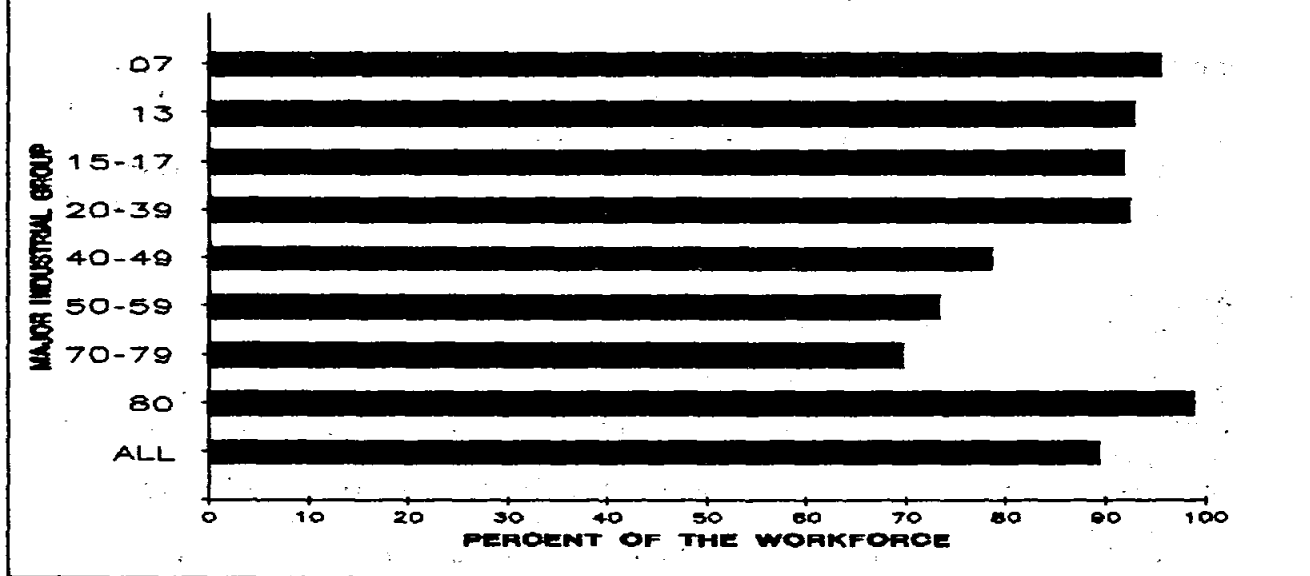
Those interested in the data available on this question should contact NIOSH for further explanation and to arrange for the specialized processing that most closely meets their needs and definitions of plant areas.







**FIGURE IV - 78**  
**WORKERS IN PLANTS WHICH REQUIRE OR RECOMMEND**  
**PERSONAL PROTECTIVE DEVICES**  
**(NOES 1981-1983)**



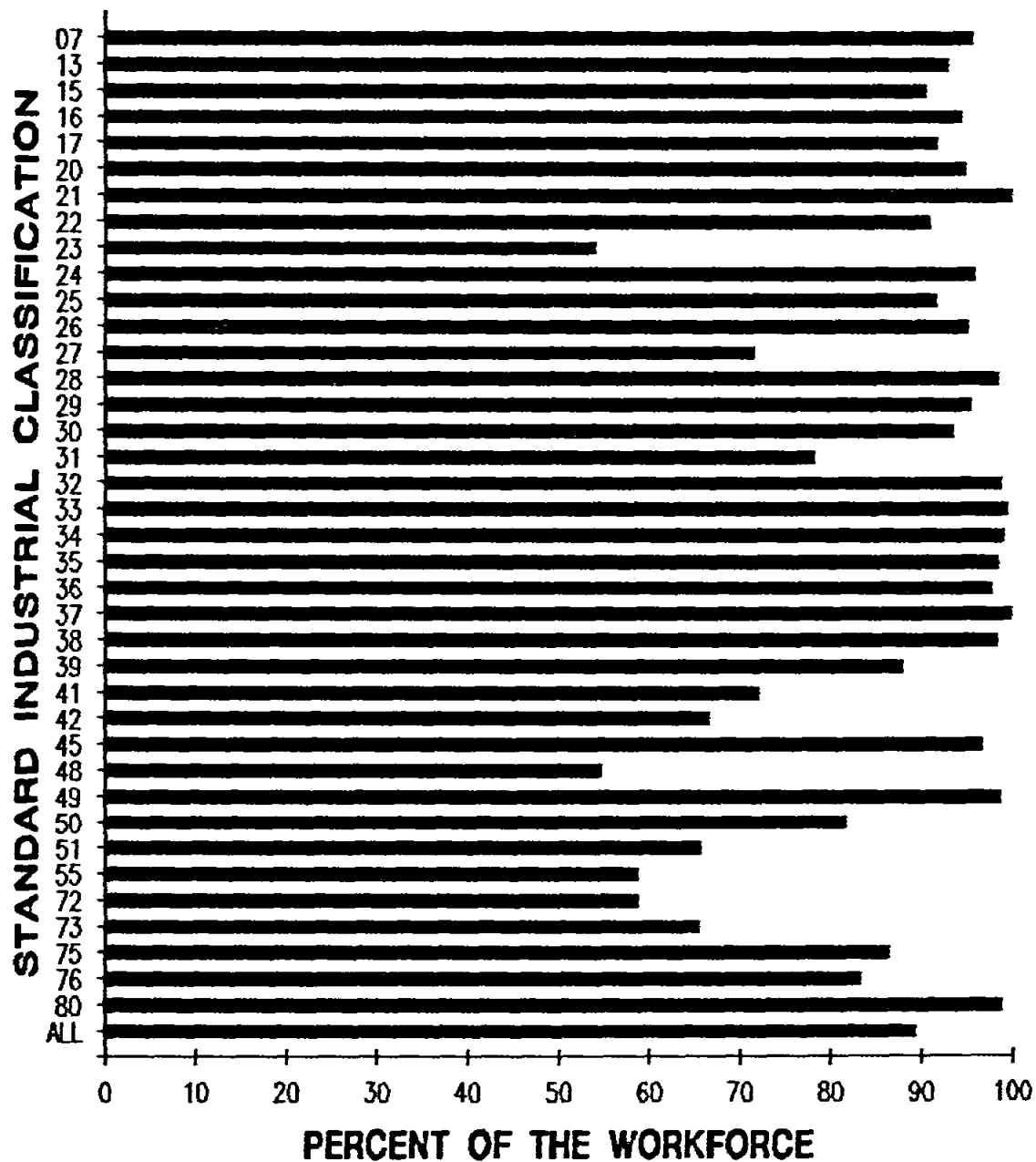
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-59

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 REQUIRE OR RECOMMEND PERSONAL PROTECTIVE DEVICES

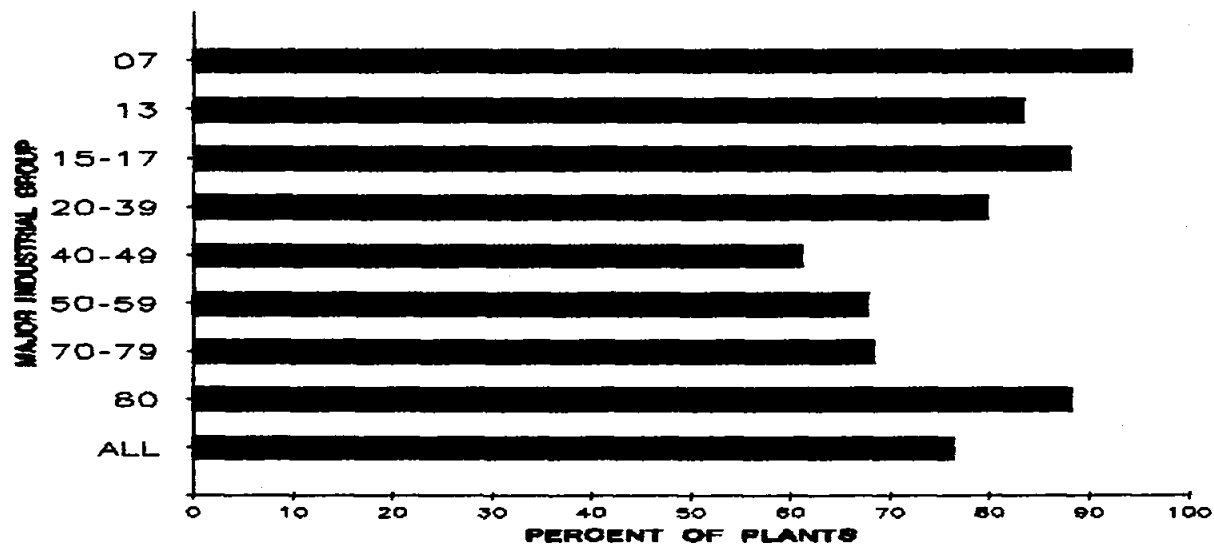
MAJOR GROUP	PLANTS			TOTAL	EMPLOYEES			TOTAL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)		SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	5247* (1508) 94.3%	70* (67) 100.0%	...	5317* (1490) 94.4%	98941* (29820) 95.4%	7009* (6680) 100.0%	...	105950* (28404) 95.7%
13	7016 (1481) 81.6%	1019* (331) 100.0%	46* (52) 100.0%	8081 (1619) 83.6%	180260 (30472) 86.3%	173943* (58021) 100.0%	31383* (35291) 100.0%	385585 (94484) 93.1%
15-17	82840 (2760) 87.8%	4028 (508) 97.2%	220* (131) 90.9%	87087 (2669) 88.2%	1895914 (39796) 90.3%	723621 (103084) 98.2%	207866* (98220) 88.1%	2827400 (143199) 92.0%
20-39	117346 (2961) 76.6%	29504 (1825) 92.9%	6105 (184) 97.4%	152955 (3883) 80.0%	3681619 (62704) 79.8%	6001251 (357057) 94.1%	8161356 (247105) 98.7%	17844226 (524958) 92.6%
40-49	31210 (2499) 58.7%	4880 (994) 83.5%	449* (137) 96.0%	36540 (2645) 61.4%	940320 (91776) 65.6%	1003374 (216134) 87.0%	547973 (108850) 95.5%	2491667 (261278) 78.8%
50-59	39484 (3087) 67.6%	2041* (536) 76.8%	...	41525 (3153) 68.0%	823249 (73269) 73.2%	303773* (78962) 74.3%	...	1127022 (111619) 73.5%
70-79	50155 (3146) 68.6%	1506 (238) 64.2%	318* (147) 90.0%	51980 (3085) 68.5%	918252 (60689) 65.9%	312873 (50861) 67.4%	304904* (120654) 89.8%	1536029 (123989) 69.9%
80	2121* (661) 74.7%	2065 (248) 95.3%	2061 (304) 100.0%	6247 (635) 88.4%	88504 (20616) 87.1%	513914 (72238) 96.2%	3022676 (359103) 100.0%	3625094 (348207) 99.1%
ALL	335420 (6853) 74.7%	45112 (2258) 90.2%	9200 (432) 97.4%	389733 (7341) 76.6%	8627058 (158848) 77.9%	9039758 (449757) 91.7%	12276158 (476774) 98.5%	29942974 (723304) 89.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 79**  
**WORKERS IN PLANTS WHICH REQUIRE OR RECOMMEND**  
**PERSONAL PROTECTIVE DEVICES**  
 (NOES 1981-1983)



**FIGURE IV - 80**  
**PLANTS WHICH REQUIRE OR RECOMMEND**  
**PERSONAL PROTECTIVE DEVICES**  
**(NOES 1981-1983)**



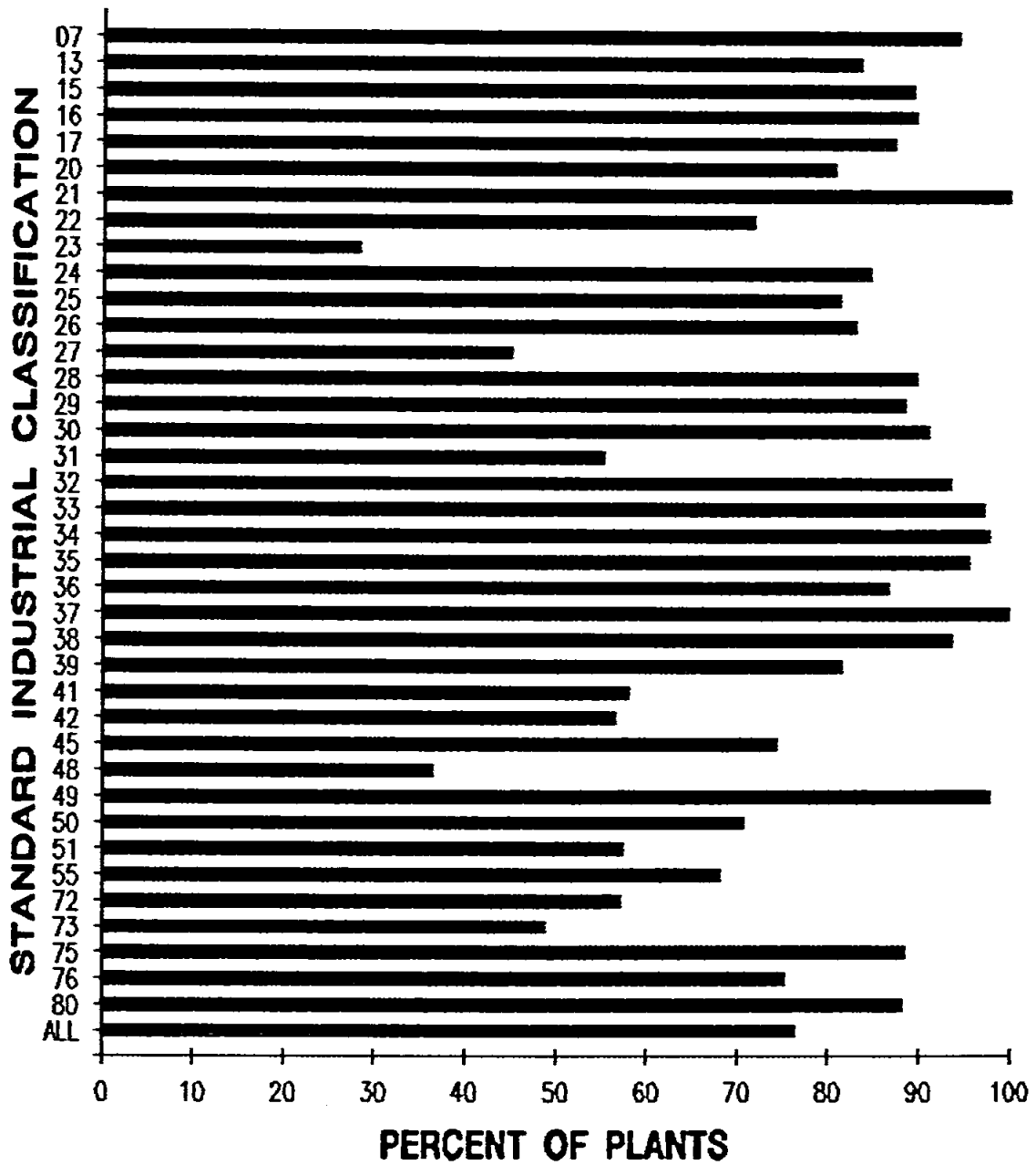
NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH REQUIRE OR RECOMMEND PERSONAL PROTECTIVE DEVICES

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (>500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (>500)	TOTAL
07	5247* (1508) 94.3%	70* (67) 100.0%	...	5317* (1490) 94.4%	98941* (29820) 95.4%	7009* (6680) 100.0%	...	105950* (28404) 95.7%
13	7016 (1481) 81.6%	1019* (331) 100.0%	46* (52) 100.0%	8081 (1619) 83.6%	180260 (30472) 86.3%	173943* (58021) 100.0%	31383* (35291) 100.0%	385585 (94484) 93.1%
15	22140 (1716) 88.9%	1107 (197) 100.0%	130* (98) 96.4%	23377 (1751) 89.4%	494563 (43880) 87.9%	198218 (38188) 100.0%	118577* (67614) 88.0%	811359 (91027) 90.6%
16	10019 (1484) 88.8%	1119 (194) 100.0%	90* (66) 84.0%	11227 (1456) 89.7%	264209 (47655) 93.0%	207759 (44051) 100.0%	89288* (54040) 88.2%	561256 (85171) 94.6%
17	50681 (2239) 87.2%	1802 (399) 93.9%	...	52483 (2191) 87.4%	1137142 (35053) 90.8%	317644 (78366) 95.9%	...	1454786 (74790) 91.9%
20	8577 (730) 75.2%	3154 (457) 98.1%	559 (121) 100.0%	12291 (957) 80.9%	316281 (17594) 81.4%	666400 (106193) 98.9%	491775 (104930) 100.0%	1474456 (115473) 94.9%
21	30* (43) 100.0%	...	79* (56) 99.6%	109* (65) 100.0%	1866* (2685) 100.0%	...	112133* (67572) 100.0%	113999* (66861) 100.0%
22	1793 (289) 61.1%	1378 (169) 86.8%	299* (80) 99.9%	3469 (356) 72.0%	70910 (15417) 66.9%	317614 (29835) 91.5%	261093* (94186) 100.0%	649617 (89208) 91.0%
23	2264* (697) 18.1%	2093 (163) 67.5%	169* (79) 69.9%	4526 (692) 28.5%	82915 (19825) 19.6%	427421 (38818) 70.1%	164313* (73101) 78.8%	674649 (75199) 54.3%
24	8888 (732) 83.0%	1148 (128) 100.0%	104* (74) 100.0%	10140 (729) 84.8%	280403 (23560) 92.3%	183585 (22297) 100.0%	92355* (52501) 100.0%	556342 (72853) 96.0%
25	3245 (474) 77.9%	989 (164) 93.1%	119* (75) 99.6%	4353 (523) 81.4%	114616 (19480) 82.4%	238526 (40846) 93.0%	122998* (62394) 100.0%	476140 (79355) 91.8%
26	3166 (659) 77.0%	1526 (259) 97.2%	214* (73) 100.0%	4906 (670) 83.2%	118389 (18211) 86.0%	271225 (50704) 96.4%	206864* (65220) 100.0%	596478 (93151) 95.3%
27	7413 (893) 40.9%	1497 (173) 79.9%	284* (105) 89.9%	9194 (905) 45.3%	229846 (21771) 48.1%	301860 (49797) 83.6%	319539 (77479) 92.4%	851246 (106498) 71.8%
28	5395 (410) 87.4%	1160 (93) 100.0%	380 (63) 100.0%	6935 (391) 89.9%	167678 (6133) 92.8%	260831 (27986) 100.0%	476341 (101388) 100.0%	904849 (105697) 98.6%
29	849* (458) 84.0%	293* (125) 100.0%	101* (42) 100.0%	1243* (512) 88.5%	31201* (14872) 76.1%	63255* (21394) 100.0%	117545* (70259) 100.0%	212002* (80585) 95.6%
30	6043 (1134) 90.0%	1503* (387) 97.8%	180* (67) 80.3%	7726 (1299) 91.2%	207338 (26497) 92.1%	290201* (82179) 98.5%	208455* (70884) 89.2%	705994 (109041) 93.7%
31	338* (265) 36.3%	482* (130) 84.7%	25* (24) 100.0%	845* (317) 55.4%	7646* (5786) 30.7%	114516* (33207) 84.5%	15664* (16901) 100.0%	137827* (38803) 78.3%
32	8156 (1117) 92.7%	1012 (142) 100.0%	184* (71) 99.9%	9352 (1143) 93.6%	230938 (16619) 97.4%	208984 (30484) 100.0%	128993* (49687) 100.0%	568915 (44673) 98.9%
33	3974 (465) 96.1%	1468 (138) 100.0%	337 (62) 100.0%	5779 (484) 97.3%	135739 (9874) 98.0%	311081 (30513) 100.0%	621499 (82456) 100.0%	1068319 (83840) 99.7%

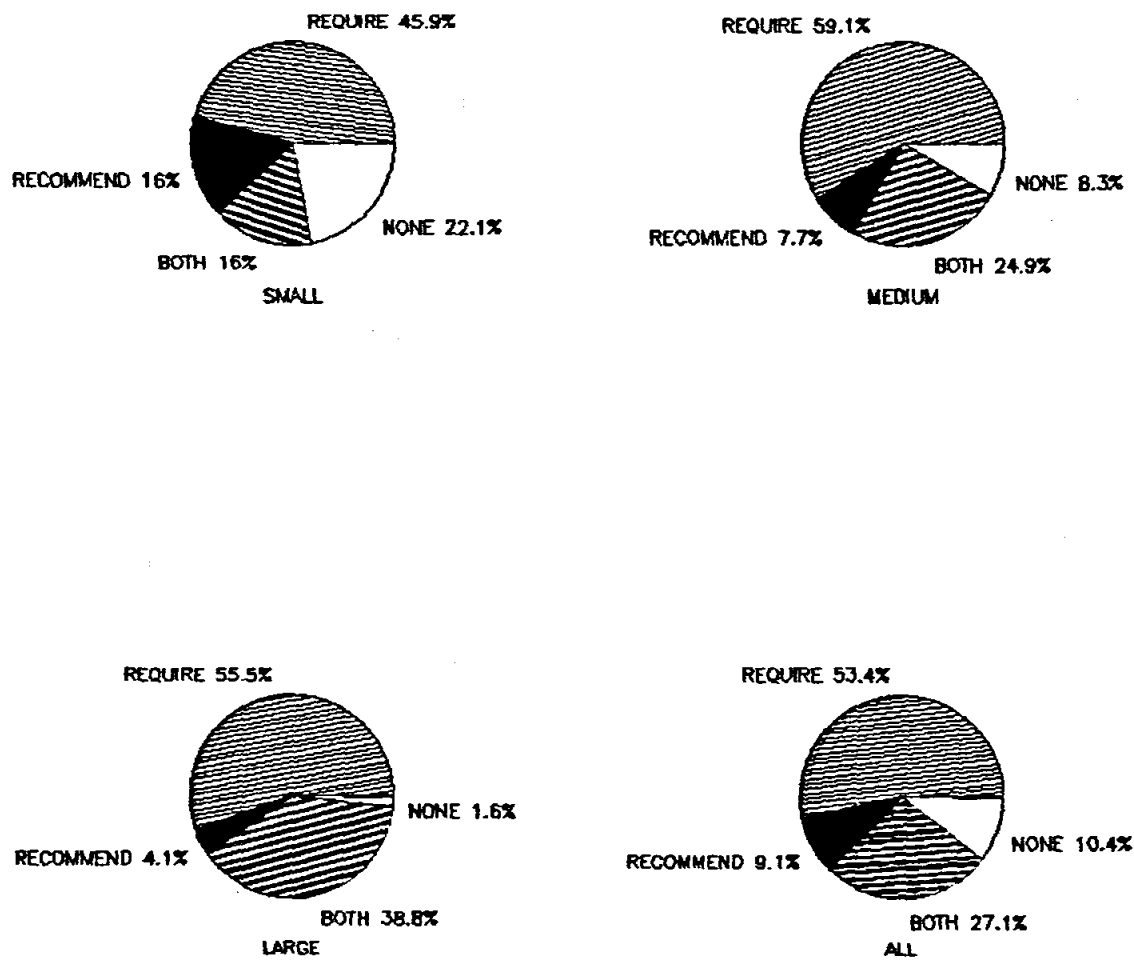
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (>500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (>500)	TOTAL
34	18098 (1029) 97.7%	3090 (136) 99.0%	346 (83) 99.9%	21533 (988) 97.9%	548015 (9834) 98.8%	591855 (24278) 99.2%	351056* (100266) 100.0%	1490926 (107901) 99.2%
35	21576 (1092) 95.3%	3351 (117) 98.4%	768 (80) 98.0%	25696 (1137) 95.7%	590452 (9608) 97.3%	652555 (6839) 98.7%	1104496 (148819) 99.2%	2347502 (147770) 98.6%
36	5812 (709) 81.8%	2585 (84) 96.3%	787 (170) 100.0%	9184 (708) 86.8%	201022 (18188) 87.2%	541399 (7236) 98.0%	1182462 (196778) 100.0%	1924882 (192234) 97.9%
37	3973 (835) 100.0%	1190 (102) 100.0%	416 (92) 99.9%	5579 (804) 100.0%	127022 (16795) 100.0%	239184 (28491) 100.0%	1514008 (247233) 100.0%	1880214 (240481) 100.0%
38	2458 (521) 91.4%	938 (90) 98.7%	416* (139) 99.9%	3812 (565) 93.8%	96227 (13660) 92.0%	190983 (20114) 98.2%	460397* (129998) 100.0%	747607 (138766) 98.4%
39	5298 (700) 80.9%	647* (1167) 81.0%	338* (216) 100.0%	6283 (1375) 81.7%	123115 (16450) 74.2%	129775* (235957) 86.8%	209369* (120490) 100.0%	462260* (213026) 88.7%
41	2443* (834) 55.3%	427* (159) 83.7%	...	2870* (889) 58.2%	70881* (22225) 60.3%	72831* (35315) 89.3%	...	143712* (45518) 72.2%
42	11293 (1634) 56.4%	893* (226) 60.2%	79* (54) 96.1%	12264 (1661) 56.8%	306405 (51326) 62.8%	170123* (44021) 65.7%	72864* (49190) 97.4%	549392 (65278) 66.9%
45	2227* (771) 68.7%	590* (397) 99.9%	147* (57) 100.0%	2964* (846) 74.5%	63262* (22608) 81.6%	109332* (75829) 100.0%	264255* (77656) 100.0%	436849 (101575) 96.8%
48	5015 (1010) 34.1%	696 (165) 77.1%	18* (13) 52.4%	5729 (997) 36.6%	186032* (62734) 43.7%	136677* (38648) 77.5%	46280* (33466) 66.0%	368989 (75599) 54.9%
49	8010 (1696) 97.5%	1862* (567) 100.0%	173* (99) 99.8%	10045 (1922) 98.0%	260526 (57110) 96.7%	425470* (151076) 100.0%	146565* (65566) 100.0%	832561 (186923) 98.9%
50	21072 (2066) 69.4%	1713* (451) 95.0%	...	22784 (2078) 70.9%	482168 (65189) 76.5%	265348* (74485) 93.7%	...	747516 (109020) 81.8%
51	5161 (1163) 56.6%	237* (237) 100.0%	...	5398 (1263) 57.7%	112486* (32381) 60.8%	27013* (27013) 100.0%	...	139498* (48904) 65.8%
55	13252 (2395) 70.0%	91* (84) 14.7%	...	13343 (2415) 68.3%	228595 (49131) 74.0%	11413* (10448) 11.6%	...	240008 (52206) 58.9%
72	11815 (1612) 57.3%	406* (148) 60.1%	13* (19) 100.0%	12234 (1640) 57.4%	217182 (36374) 57.2%	51398* (19623) 62.5%	10670* (15114) 100.0%	279250 (47321) 59.0%
73	7804 (1333) 47.1%	918 (205) 61.7%	305* (139) 89.5%	9027 (1360) 49.0%	198957 (38708) 47.2%	228896 (48868) 65.5%	294234* (115014) 89.5%	722086 (121602) 65.6%
75	23213 (3466) 88.7%	59* (60) 99.7%	...	23272 (3478) 88.7%	357383 (52579) 86.5%	8238* (8380) 100.0%	...	365621 (53823) 86.7%
76	7324 (1735) 75.1%	123* (94) 100.0%	...	7447 (1768) 75.4%	144731 (24755) 81.1%	24341* (19716) 100.0%	...	169072 (37436) 83.4%
80	2121* (661) 74.7%	2065 (248) 95.3%	2061 (304) 100.0%	6247 (635) 88.4%	88504 (20616) 87.1%	513914 (72238) 96.2%	3022676 (359103) 100.0%	3625094 (348207) 99.1%
ALL	333198 (7920) 74.6%	44748 (988) 90.3%	9184 (400) 97.4%	387129 (7903) 76.6%	8573844 (138331) 77.8%	8966424 (141128) 91.7%	12267152 (485313) 98.5%	29807420 (505905) 89.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 81**  
**PLANTS WHICH REQUIRE OR RECOMMEND**  
**PERSONAL PROTECTIVE DEVICES**  
 (NOES 1981-1983)

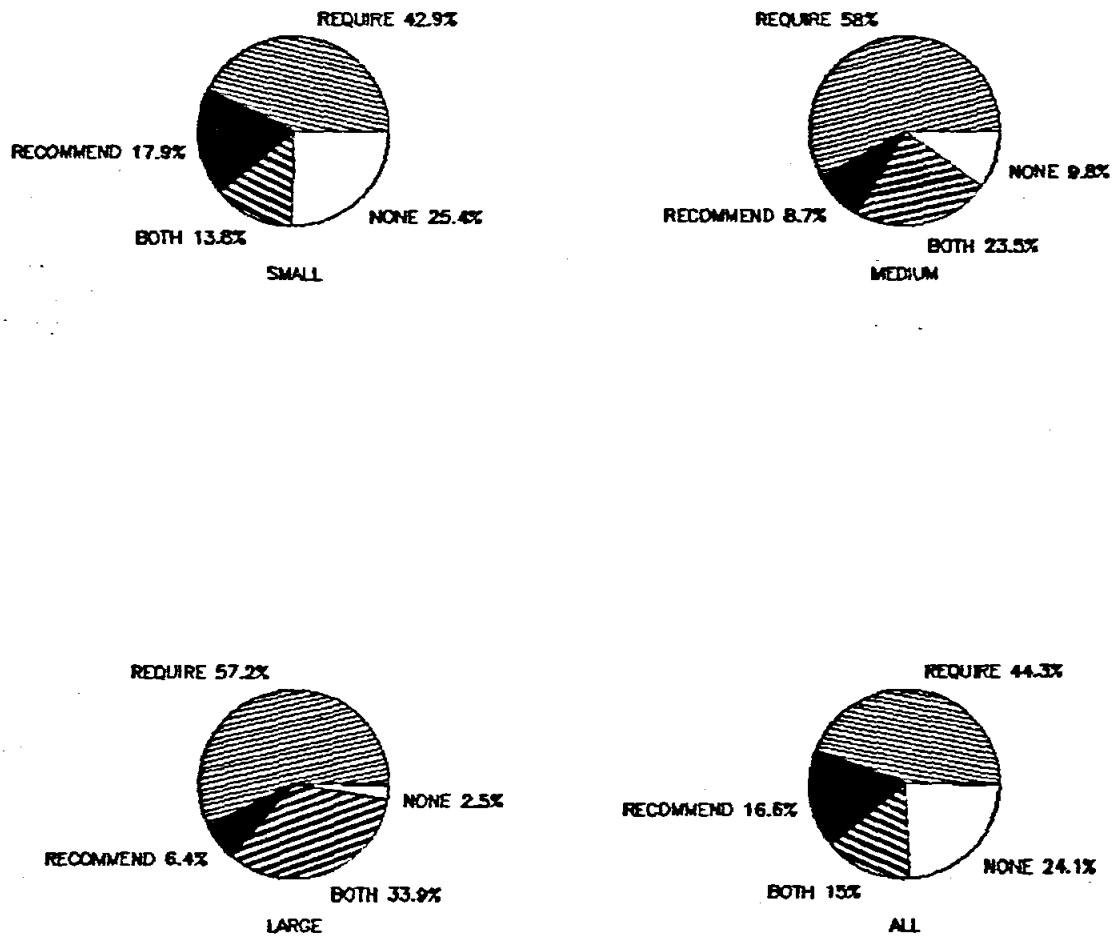


**FIGURE IV - 82**  
**MANAGEMENT PERSONAL PROTECTIVE DEVICE**  
**POLICY BY PROPORTION OF WORKERS IN PLANTS**  
**(NOES 1981-1983)**





**FIGURE IV - 83**  
**MANAGEMENT PERSONAL PROTECTIVE DEVICE POLICY**  
**BY PROPORTION OF PLANTS AND PLANT SIZE**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 48**  
**Source of Personal Protective Devices Used by Workers**

**Intent**

The intent of this question was to determine who is financially responsible for the purchase of the personal protective devices used by workers.

This item was displayed on the questionnaire as:

48. Who provides personal protective devices?

- 1 individual employees
- 2 employer
- 3 both
- 4 other (specify) \_\_\_\_\_

**Notes**

This question was asked only of those who responded that there was a management policy to require or recommend the use of protective devices.

The response was coded according to financial responsibility. For example, if employees purchased their own equipment, but were reimbursed by the company, the employer was regarded as the source of equipment. If costs were shared, then "both" was the provider.

In the instances where the equipment was provided by such outside sources as unions or government agencies the "other" response was coded.

**Analysis**

Two analyses of the responses to question 48 are presented.

- (1) Response 48.2 - Employer provision of personal protective devices to workers

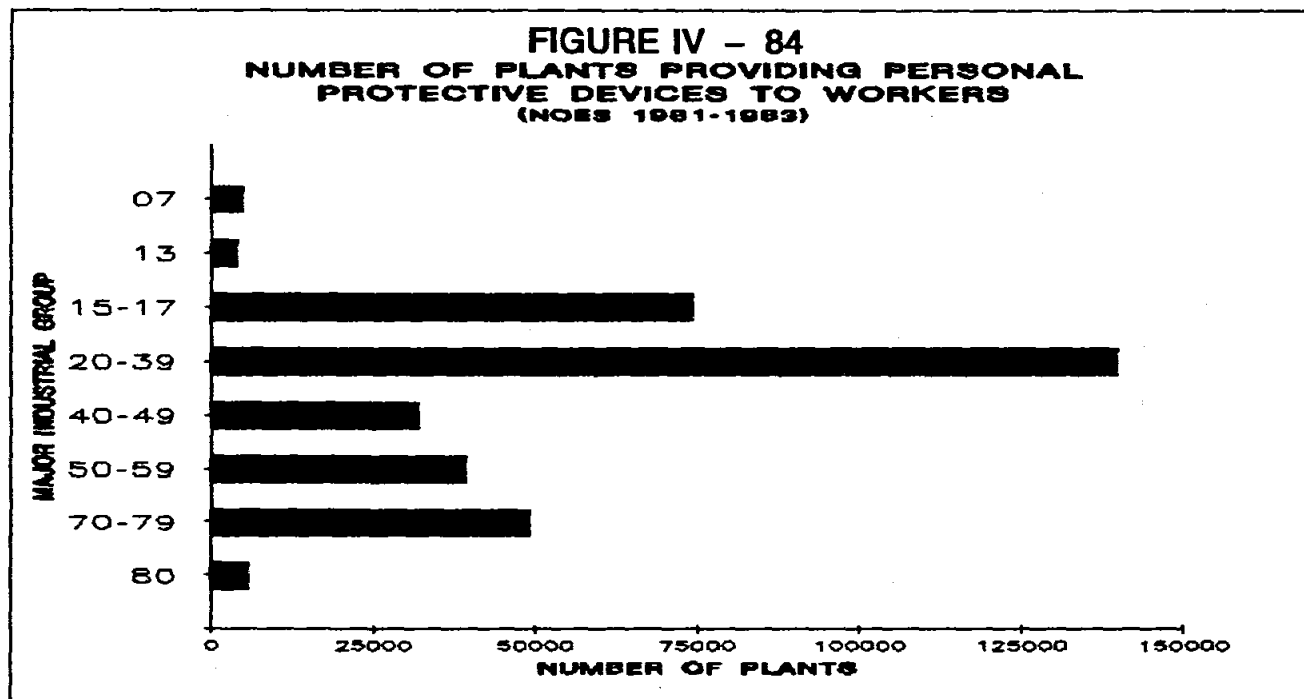
Estimates of the number and proportion of plants which provide personal protective gear to workers are displayed in Figures IV-84 and IV-85, and parts of Tables IV-61 and IV-62.

Figure IV-84	Number of plants providing personal protective devices to workers (by major industrial group)
Figure IV-85	Number of plants providing personal protective devices to workers (by 2-digit SIC)
Table IV-61	Number and percent of plants which require or recommend personal protective devices by provider (by major industrial group)
Table IV-62	Number and percent of plants which require or recommend personal protective devices by provider (by 2-digit SIC)

- (2) Responses 48.1, 48.2, 48.3, or 48.4 - Provision of protective devices by workers, employers, employers/workers, or other sources

Estimates of the number and percent of plants, and proportion of workers in plants where protective gear is provided by workers, employers, employers and workers, or other sources are displayed in Figures IV-86 and IV-87, and parts of Tables IV-61 and IV-62.

Figure IV-86	Source of protective devices by proportion of workers and plant size
Figure IV-87	Source of protective devices by proportion of plants and plant size
Table IV-61	Number and percent of plants which require or recommend personal protective devices by provider (by major industrial group)
Table IV-62	Number and percent of plants which require or recommend personal protective devices by provider (by 2-digit SIC)



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-61

NUMBER AND PERCENT OF PLANTS WHICH REQUIRE OR RECOMMEND  
PERSONAL PROTECTIVE DEVICES BY PROVIDER

MAJOR GROUP	EMPLOYER ONLY				EMPLOYEES/EMPLOYER, EMPLOYEES, OTHER			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5247* (1508) 94.3%	...	...	5247* (1508) 93.2%	...	70* (67) 100.0%	...	70* (67) 1.2%
13	3525* (940) 41.0%	799* (261) 78.4%	46* (52) 100.0%	4370 (908) 45.2%	3491* (1012) 40.6%	220* (121) 21.6%	...	3711* (1074) 38.4%
15-17	70845 (2877) 75.1%	3535 (482) 85.3%	197* (125) 81.5%	74578 (2803) 75.5%	11994 (1840) 12.7%	493* (215) 11.9%	23* (22) 9.4%	12510 (1906) 12.7%
20-39	107886 (3101) 70.4%	26799 (1669) 84.4%	5321 (215) 84.9%	140006 (3825) 73.2%	9460 (1342) 6.2%	2705 (450) 8.5%	783 (148) 12.5%	12948 (1472) 6.8%
40-49	27377 (2535) 51.5%	4499 (1007) 77.0%	384* (114) 82.1%	32260 (2500) 54.3%	3834* (959) 7.2%	381* (181) 6.5%	65* (42) 14.0%	4280 (968) 7.2%
50-59	37849 (3145) 64.8%	1841* (543) 69.2%	...	39690 (3234) 65.0%	1635* (699) 2.8%	200* (116) 7.5%	...	1835* (706) 3.0%
70-79	47814 (3028) 65.4%	1314 (247) 56.0%	313* (146) 88.3%	49441 (2993) 65.2%	2342* (939) 3.2%	192* (119) 8.2%	6* (6) 1.6%	2540* (927) 3.3%
80	2121* (661) 74.7%	1978 (241) 91.3%	1935 (297) 93.9%	6035 (640) 85.4%	...	87* (50) 4.0%	126* (38) 6.1%	212* (67) 3.0%
ALL	302665 (6853) 67.4%	40765 (2124) 81.5%	8197 (433) 86.8%	351627 (7188) 69.1%	32755 (2915) 7.3%	4347 (575) 8.7%	1003 (160) 10.6%	38106 (3043) 7.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

NUMBER AND PERCENT OF PLANTS WHICH REQUIRE OR RECOMMEND  
PERSONAL PROTECTIVE DEVICES BY PROVIDER

SIC CODE	EMPLOYER ONLY				EMPLOYEES/EMPLOYER, EMPLOYEES, OTHER			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	5247* (1508) 94.3%	...	...	5247* (1508) 93.2%	...	70* (67) 100.0%	...	70* (67) 1.2%
13	3525* (940) 41.0%	799* (261) 78.4%	46* (52) 100.0%	4370 (908) 45.2%	3491* (1012) 40.6%	220* (121) 21.6%	...	3711* (1074) 38.4%
15	18558 (1349) 74.5%	999 (219) 90.2%	108* (95) 79.6%	19665 (1402) 75.2%	3582 (823) 14.4%	108* (76) 9.8%	23* (22) 16.8%	3713 (825) 14.2%
16	8471 (1597) 75.1%	886 (208) 79.2%	90* (66) 84.0%	9448 (1632) 75.5%	1547* (655) 13.7%	233* (147) 20.8%	...	1780* (659) 14.2%
17	43816 (2391) 75.4%	1650 (383) 86.0%	...	45465 (2314) 75.7%	6865 (1480) 11.8%	152* (111) 7.9%	...	7017 (1490) 11.7%
20	7346 (670) 64.4%	2960 (442) 92.0%	554 (121) 99.2%	10861 (809) 71.5%	1231* (474) 10.8%	194* (84) 6.0%	5* (6) .9%	1430* (495) 9.4%
21	30* (43) 100.0%	...	32* (61) 41.0%	63* (73) 57.5%	...	...	46* (37) 58.6%	46* (37) 42.5%
22	1793 (289) 61.1%	1228 (212) 77.3%	299* (80) 99.9%	3320 (388) 68.9%	...	150* (78) 9.4%	...	150* (78) 3.1%
23	2130* (644) 17.0%	2093 (163) 67.5%	127* (68) 52.3%	4350 (661) 27.4%	134* (131) 1.1%	...	43* (36) 17.6%	177* (138) 1.1%
24	8098 (815) 75.6%	973 (178) 84.7%	104* (74) 100.0%	9175 (777) 76.7%	790* (443) 7.4%	175* (100) 15.2%	...	965* (457) 8.1%
25	3245 (474) 77.9%	940 (148) 88.5%	119* (75) 99.6%	4303 (514) 80.5%	...	49* (31) 4.6%	...	49* (31) .9%
26	3022 (620) 73.5%	1265 (234) 80.6%	159* (57) 74.4%	4446 (588) 75.4%	144* (104) 3.5%	261* (140) 16.6%	55* (53) 25.8%	460* (180) 7.8%
27	7193 (814) 39.7%	1448 (196) 77.3%	231* (98) 73.3%	8873 (832) 43.7%	220* (221) 1.2%	48* (53) 2.6%	52* (43) 16.6%	321* (228) 1.6%
28	5339 (417) 86.5%	1160 (93) 100.0%	307 (56) 80.7%	6806 (403) 88.2%	56* (43) .9%	...	73* (37) 19.2%	129* (61) 1.7%
29	673* (437) 66.6%	211* (76) 71.8%	69* (40) 68.4%	953* (455) 67.8%	176* (181) 17.4%	83* (120) 28.3%	32* (31) 31.7%	291* (197) 20.7%
30	5631 (1138) 83.9%	1381* (399) 89.8%	173* (68) 77.1%	7185 (1304) 84.8%	412* (271) 6.1%	122* (65) 8.0%	7* (9) 3.2%	541* (251) 6.4%
31	338* (265) 36.3%	482* (130) 84.7%	25* (24) 100.0%	845* (317) 55.4%	...	...	...	...
32	7644 (1185) 86.9%	838 (167) 82.9%	184* (71) 99.9%	8666 (1229) 86.7%	512* (225) 5.8%	174* (109) 17.2%	...	685* (242) 6.9%
33	3268 (481) 79.1%	1429 (152) 97.4%	280 (58) 83.1%	4978 (486) 83.8%	706* (247) 17.1%	39* (84) 2.6%	57* (31) 16.9%	801* (260) 13.5%

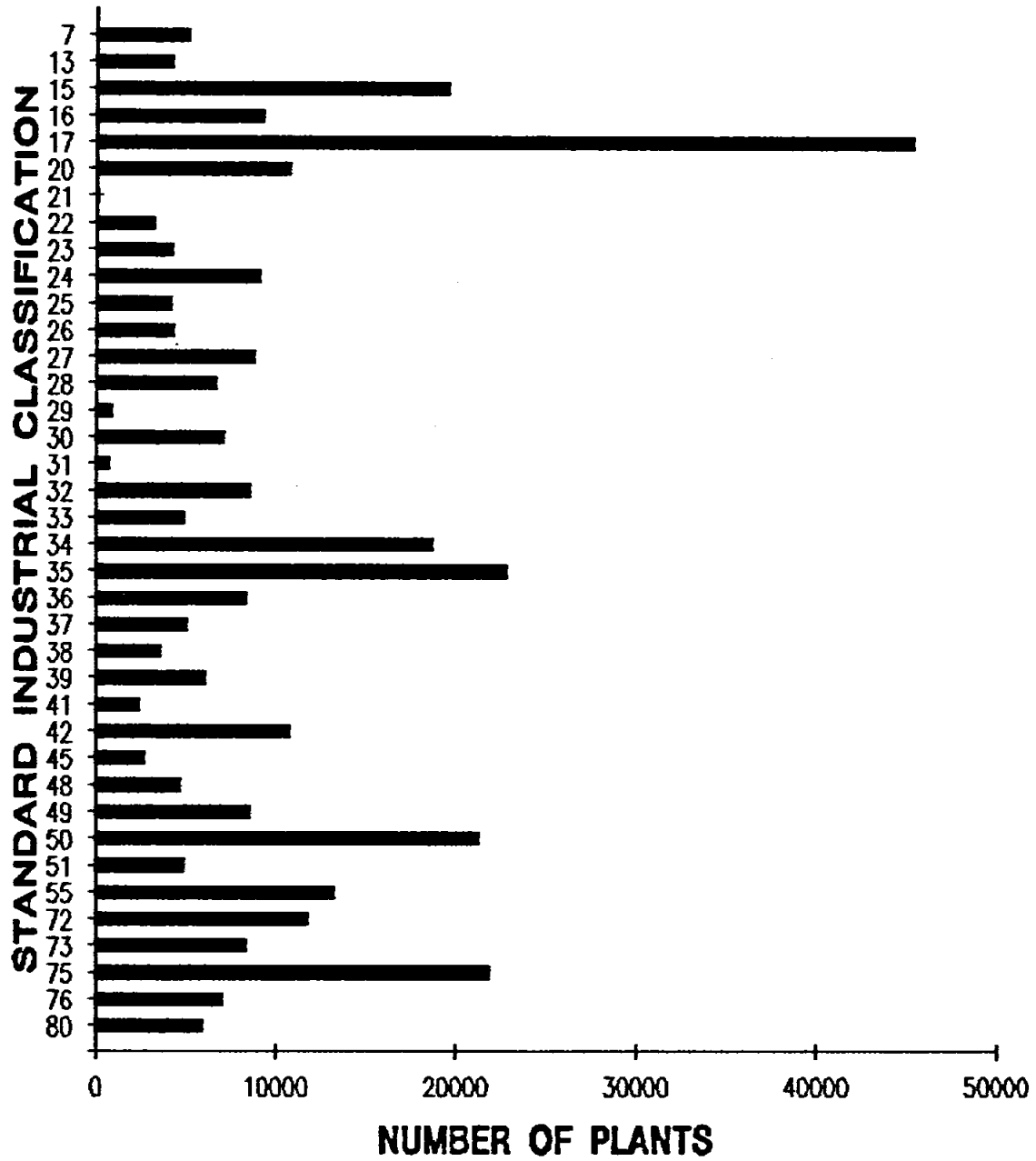
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983)

TABLE NO. IV-62 (CONTINUED)

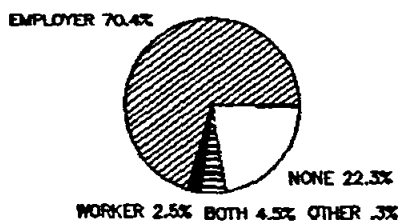
SIC CODE	EMPLOYER ONLY				EMPLOYEES/EMPLOYER, EMPLOYEES, OTHER			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (>500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (>500)	TOTAL
34	15814 (983) 85.4%	2770 (188) 88.7%	248 (61) 71.7%	18832 (945) 85.6%	2284 (558) 12.3%	320* (113) 10.2%	97* (75) 28.2%	2702 (599) 12.3%
35	19327 (1035) 85.3%	2890 (185) 84.9%	654 (80) 83.4%	22871 (1030) 85.2%	2249* (606) 9.9%	461* (143) 13.6%	114* (44) 14.6%	2825 (643) 10.5%
36	5635 (721) 79.3%	2135 (139) 79.5%	673 (126) 85.5%	8443 (727) 79.6%	176* (94) 2.5%	450* (157) 16.8%	115* (72) 14.6%	741* (217) 7.0%
37	3687 (848) 92.8%	1134 (89) 95.3%	346 (68) 83.1%	5167 (810) 92.6%	286* (130) 7.2%	56* (44) 4.7%	70* (55) 16.9%	412* (141) 7.4%
38	2433 (521) 90.5%	863 (110) 90.2%	400* (135) 96.2%	3696 (593) 91.0%	25* (38) .9%	75* (64) 7.9%	16* (22) 3.7%	116* (80) 2.8%
39	5238 (719) 79.9%	598* (1100) 74.9%	338* (216) 100.0%	6174 (1330) 80.3%	60* (63) .9%	49* (78) 6.1%	...	108* (93) 1.4%
41	2175* (756) 49.2%	335* (122) 65.7%	...	2510* (785) 50.9%	268* (223) 6.1%	92* (79) 18.0%	...	360* (244) 7.3%
42	10017 (1565) 50.0%	796* (223) 53.7%	54* (43) 65.4%	10866 (1584) 50.3%	1276* (616) 6.4%	97* (69) 6.5%	25* (26) 30.7%	1398* (595) 6.5%
45	2082* (810) 64.2%	590* (397) 99.9%	107* (48) 73.0%	2779* (874) 69.9%	145* (151) 4.5%	...	40* (32) 27.3%	185* (158) 4.7%
48	4223 (908) 28.7%	529* (243) 58.7%	18* (13) 52.4%	4770 (901) 30.5%	792* (581) 5.4%	166* (139) 18.5%	...	959* (598) 6.1%
49	6658 (1577) 81.0%	1862* (567) 100.0%	173* (99) 99.8%	8693 (1711) 84.8%	1352* (846) 16.5%	...	...	1352* (846) 13.2%
50	19834 (2073) 65.4%	1513* (460) 84.0%	...	21347 (2111) 66.4%	1237* (541) 4.1%	200* (116) 11.1%	...	1437* (558) 4.5%
51	4763 (1069) 52.3%	237* (237) 100.0%	...	5000 (1183) 53.5%	398* (410) 4.4%	...	...	398* (410) 4.3%
55	13252 (2395) 70.0%	91* (84) 14.7%	...	13343 (2415) 68.3%	...	...	...	...
72	11458 (1507) 55.5%	406* (148) 60.1%	13* (19) 100.0%	11877 (1535) 55.7%	357* (379) 1.7%	...	...	357* (379) 1.7%
73	7424 (1349) 44.8%	726* (185) 48.8%	299* (139) 87.8%	8449 (1383) 45.9%	380* (285) 2.3%	192* (119) 12.9%	6* (6) 1.7%	578* (312) 3.1%
75	21901 (3405) 83.7%	59* (60) 99.7%	...	21960 (3416) 83.7%	1312* (672) 5.0%	...	...	1312* (672) 5.0%
76	7031* (1784) 72.1%	123* (94) 100.0%	...	7154* (1832) 72.5%	293* (388) 3.0%	...	...	293* (388) 3.0%
80	2121* (661) 74.7%	1978 (241) 91.3%	1935 (297) 93.9%	6035 (640) 85.4%	...	87* (50) 4.0%	126* (38) 6.1%	212* (67) 3.0%
ALL	300443 (7087) 67.3%	40426 (1147) 81.6%	8181 (380) 86.8%	349050 (7039) 69.0%	32755 (3382) 7.3%	4321 (528) 8.7%	1003 (153) 10.6%	38079 (3310) 7.5%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

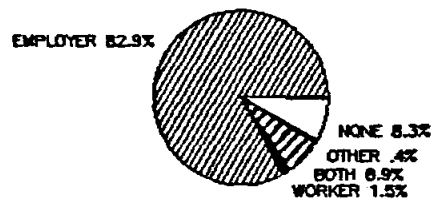
**FIGURE IV - 85**  
**NUMBER OF PLANTS PROVIDING PERSONAL**  
**PROTECTIVE DEVICES TO WORKERS**  
**(NOES 1981-1983)**



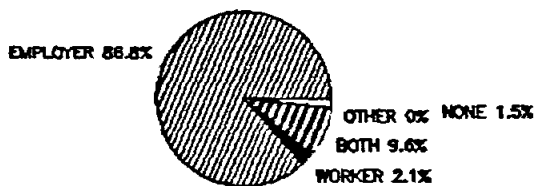
**FIGURE IV - 86**  
**SOURCE OF PROTECTIVE DEVICES BY**  
**PROPORTION OF WORKERS AND PLANT SIZE**  
**(NOES 1981-1983)**



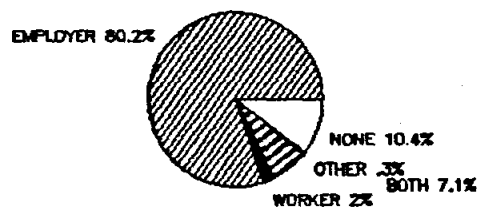
SMALL



MEDIUM



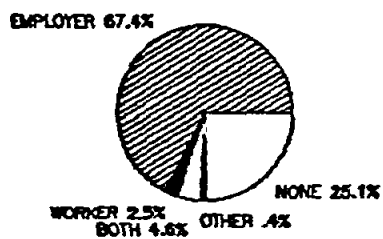
LARGE



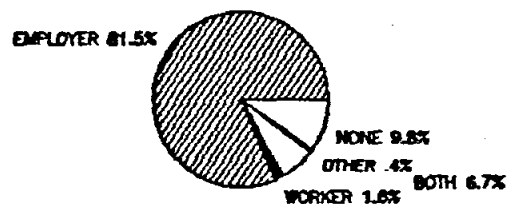
ALL



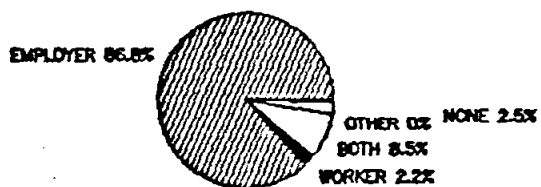
**FIGURE IV - 87**  
**SOURCE OF PROTECTIVE DEVICES BY PROPORTION**  
**OF PLANTS AND PLANT SIZE**  
**(NOES 1981-1983)**



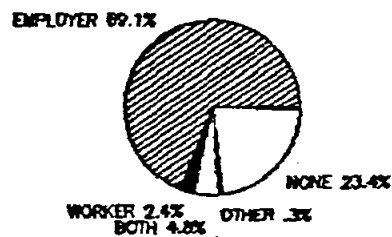
SMALL



MEDIUM



LARGE



ALL

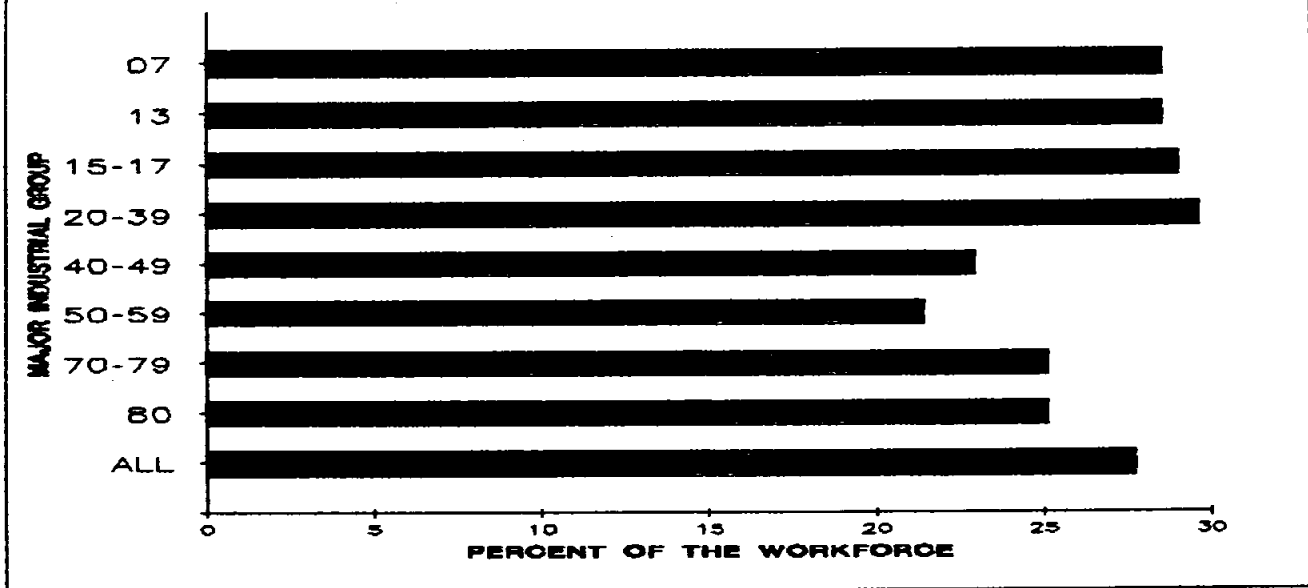


- (2) Responses 49.1, 49.2, 49.3, 49.4, and 49.5 - Assigned responsibility for maintenance of personal protective devices.

Estimates of the number and proportion of plants, and employees in those plants, by categories of assigned responsibility for maintenance of personal protective gear are presented in Figures IV-90 and IV-91, and Tables IV-63 and IV-64.

Figure IV-90	Proportion of workers in plants with protective device policies by responsibility for maintenance.
Figure IV-91	Plants with protective device policies by assigned responsibility for maintenance
Table IV-63	Number and percent of plants in which personal protective devices are maintained by designated source of service (by major industrial group)
Table IV-64	Number and percent of plants in which personal protective devices are maintained by designated source of service (by 2-digit SIC)

**FIGURE IV - 88**  
**WORKERS IN PLANTS WHERE PERSONAL PROTECTIVE**  
**DEVICES ARE MAINTAINED BY THE EMPLOYER**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-63

NUMBER AND PERCENT OF PLANTS IN WHICH PERSONAL PROTECTIVE  
 DEVICES ARE MAINTAINED BY DESIGNATED SOURCE OF SERVICE

MAJOR GROUP	WORKERS	EMPLOYER	WORKER & EMPLOYER	NONE	OTHER
07	263* (247) 4.7%	3808* (1046) 67.6%	1017* (673) 18.0%	230* (220) 4.1%	...
13	539* (341) 5.6%	5262 (1285) 54.5%	2280 (566) 23.6%	...	...
15-17	11769 (1539) 11.9%	57106 (2717) 57.8%	12919 (1678) 13.1%	3736* (1086) 3.8%	1557* (607) 1.6%
20-39	16731 (1646) 8.7%	103812 (3883) 54.3%	20491 (1539) 10.7%	8932 (1402) 4.7%	2989* (1097) 1.6%
40-49	4748 (978) 8.0%	22235 (2299) 37.4%	6439 (1601) 10.8%	1348* (573) 2.3%	1769* (650) 3.0%
50-59	6069 (1320) 9.9%	28391 (2691) 46.5%	2716* (765) 4.4%	3365* (1162) 5.5%	984* (780) 1.6%
70-79	8160* (2074) 10.8%	31654 (2984) 41.7%	8168 (1348) 10.8%	3136* (1185) 4.1%	861* (606) 1.1%
80	697* (275) 9.9%	4637 (627) 65.6%	756 (166) 10.7%	44* (92) .6%	114* (88) 1.6%
ALL	48978 (3512) 9.6%	256903 (6858) 50.5%	54785 (3309) 10.8%	20791 (2507) 4.1%	8275 (1726) 1.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

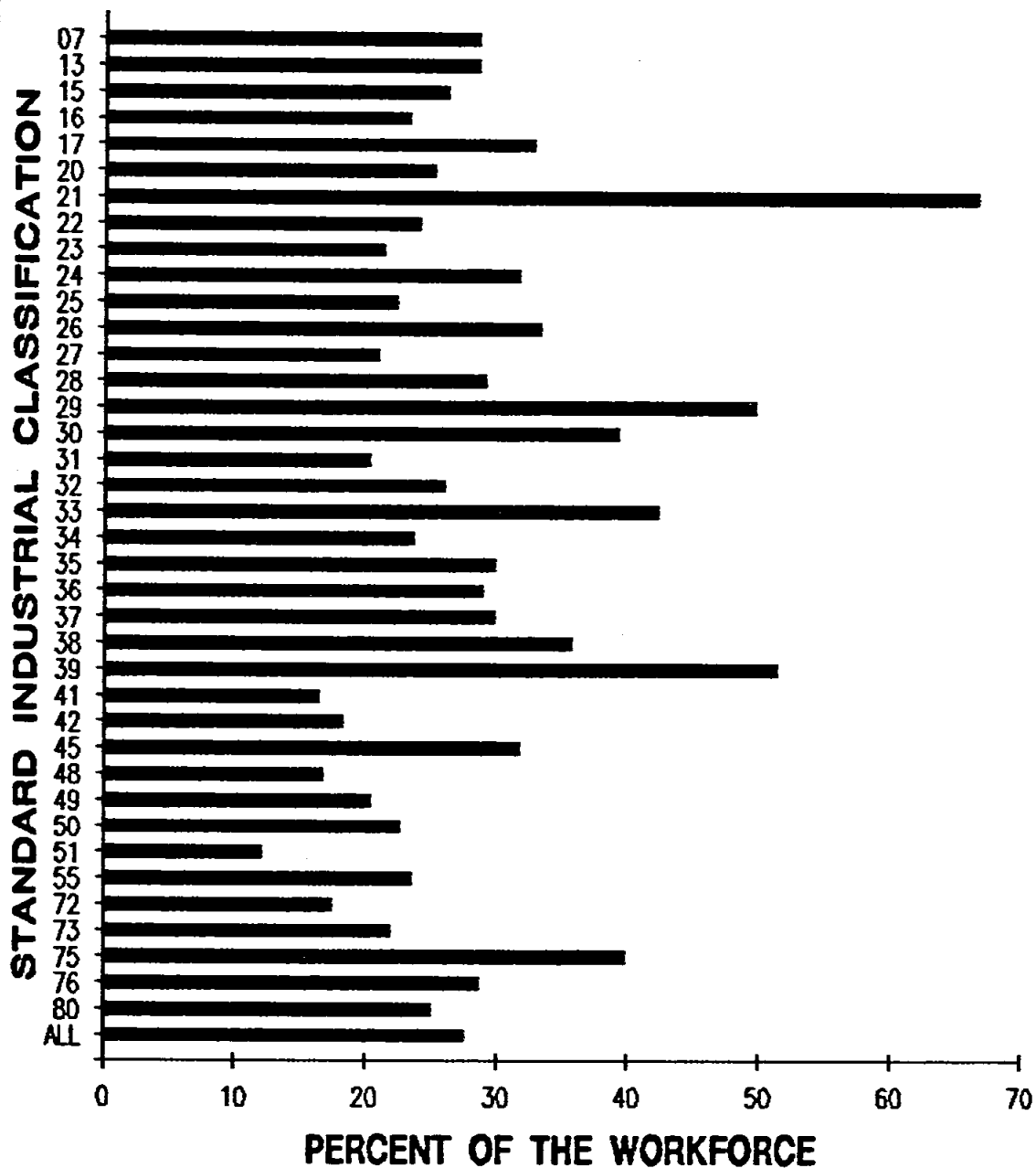
NUMBER AND PERCENT OF PLANTS IN WHICH PERSONAL PROTECTIVE DEVICES ARE MAINTAINED BY DESIGNATED SOURCE OF SERVICE

SIC CODE	WORKERS	EMPLOYER	WORKER & EMPLOYER	NONE	OTHER
07	263* (247) 4.7%	3808* (1046) 67.6%	1017* (673) 18.0%	230* (220) 4.1%	...
13	539* (341) 5.6%	5262 (1285) 54.5%	2280 (566) 23.6%	...	...
15	1875* (862) 7.2%	15543 (1733) 59.4%	4174 (877) 16.0%	1263* (494) 4.8%	522* (314) 2.0%
16	1108* (448) 8.9%	8618 (1286) 68.9%	1019* (338) 8.1%	156* (148) 1.2%	327* (117) 2.6%
17	8786 (1353) 14.6%	32945 (2280) 54.9%	7725 (1180) 12.9%	2318* (905) 3.9%	708* (462) 1.2%
20	871* (250) 5.7%	9148 (844) 60.2%	1228* (317) 8.1%	792* (335) 5.2%	251* (129) 1.7%
21	...	48* (60) 43.8%	61* (33) 56.2%	...	...
22	234* (156) 4.9%	2386 (323) 49.5%	370* (152) 7.7%	252* (183) 5.2%	227* (145) 4.7%
23	553* (221) 3.5%	2346 (536) 14.8%	714* (331) 4.5%	589* (306) 3.7%	323* (201) 2.0%
24	1324* (450) 11.1%	6165 (777) 51.5%	1288* (439) 10.8%	851* (297) 7.1%	513* (631) 4.3%
25	157* (94) 2.9%	3148 (529) 58.9%	935* (405) 17.5%	112* (100) 2.1%	...
26	764* (439) 13.0%	3288 (456) 55.8%	641* (390) 10.9%	213* (141) 3.8%	...
27	1333* (453) 6.6%	5594 (635) 27.5%	700* (362) 3.4%	1410* (620) 6.9%	156* (83) .8%
28	299* (139) 3.9%	5551 (374) 72.0%	846* (317) 11.0%	59* (55) .8%	181* (117) 2.3%
29	...	515* (230) 36.7%	728* (441) 51.8%	...	...
30	811* (395) 9.6%	5553 (1173) 65.6%	935* (248) 11.0%	218* (142) 2.6%	208* (178) 2.5%
31	24* (27) 1.6%	605* (250) 39.7%	180* (197) 11.8%	36* (55) 2.3%	...
32	734* (406) 7.3%	6606 (1115) 66.1%	906* (357) 9.1%	969* (490) 9.7%	135* (99) 1.4%
33	651* (376) 11.0%	3065 (485) 51.6%	1811* (579) 30.5%	253* (175) 4.3%	...

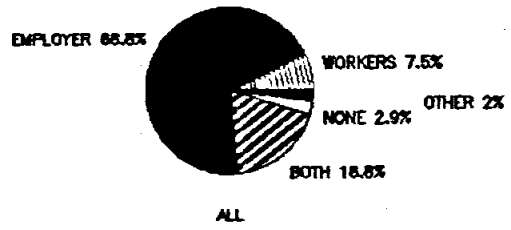
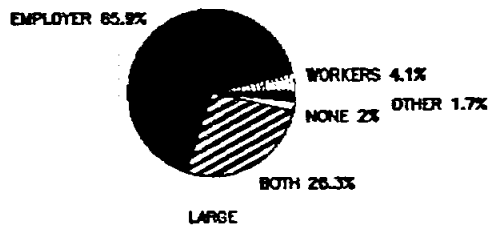
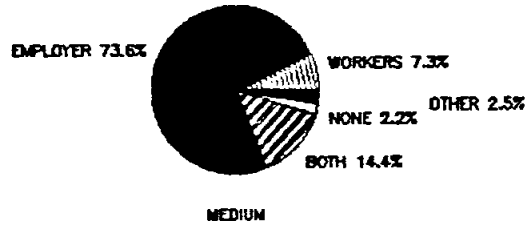
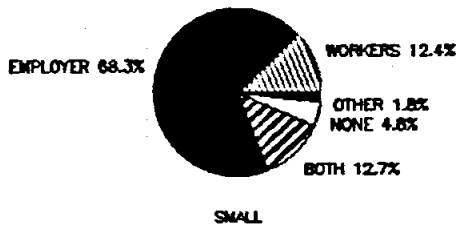
SIC CODE	WORKERS	EMPLOYER	WORKER & EMPLOYER	NONE	OTHER
34	2699* (766) 12.3%	15066 (980) 68.5%	3107 (753) 14.1%	587 (99) 2.7%	75* (67) .3%
35	3366 (781) 12.5%	18444 (1619) 68.7%	2149 (484) 8.0%	1091* (540) 4.1%	646* (405) 2.4%
36	1089* (395) 10.3%	6461 (673) 61.1%	1041* (274) 9.8%	424* (360) 4.0%	169* (121) 1.6%
37	813* (408) 14.6%	3494 (765) 62.6%	1111* (312) 19.9%	107* (71) 1.9%	54* (51) 1.0%
38	197* (133) 4.9%	3271 (629) 80.5%	289* (133) 7.1%	55* (66) 1.4%	...
39	812* (374) 10.6%	3057* (1088) 39.8%	1449* (389) 18.8%	915* (402) 11.9%	50* (185) .7%
41	192* (218) 3.9%	2120* (738) 43.0%	57* (47) 1.2%	233* (153) 4.7%	268* (223) 5.4%
42	2554* (816) 11.8%	6940 (1217) 32.1%	1394* (659) 6.5%	1031* (527) 4.8%	346* (238) 1.6%
45	855* (429) 21.5%	1463* (640) 36.8%	562* (430) 14.1%	84* (111) 2.1%	...
48	540* (410) 3.5%	4258 (873) 27.2%	764* (497) 4.9%	...	166* (139) 1.1%
49	549* (293) 5.4%	6505 (1288) 63.5%	2411* (982) 23.5%	...	580* (478) 5.7%
50	3683 (745) 11.5%	15890 (1965) 49.4%	1765* (570) 5.5%	1445* (697) 4.5%	...
51	259* (220) 2.8%	3688 (857) 39.4%	...	738* (518) 7.9%	714* (728) 7.6%
55	2127* (905) 10.9%	8812 (1877) 45.1%	951* (484) 4.9%	1182* (582) 6.0%	271* (260) 1.4%
72	1959* (1005) 9.2%	7744 (1349) 36.3%	1829* (1014) 8.6%	398* (333) 1.9%	304* (352) 1.4%
73	366* (269) 2.0%	6987 (1151) 38.0%	1451* (602) 7.9%	121* (129) .7%	103* (58) .6%
75	4121* (1272) 15.7%	12455 (1948) 47.5%	3624* (1383) 13.8%	2618* (1030) 10.0%	455* (438) 1.7%
76	1714* (843) 17.4%	4468* (1758) 45.3%	1265* (748) 12.8%	...	...
80	697* (275) 9.9%	4637 (627) 65.6%	756 (166) 10.7%	44* (92) .6%	114* (88) 1.6%
ALL	48935 (3300) 9.7%	255975 (9315) 50.6%	53560 (4322) 10.6%	20791 (2805) 4.1%	7867* (2059) 1.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.

**FIGURE IV - 89**  
**WORKERS IN PLANTS WHERE PERSONAL PROTECTIVE**  
**DEVICES ARE MAINTAINED BY THE EMPLOYER**  
**(NOES 1981-1983)**

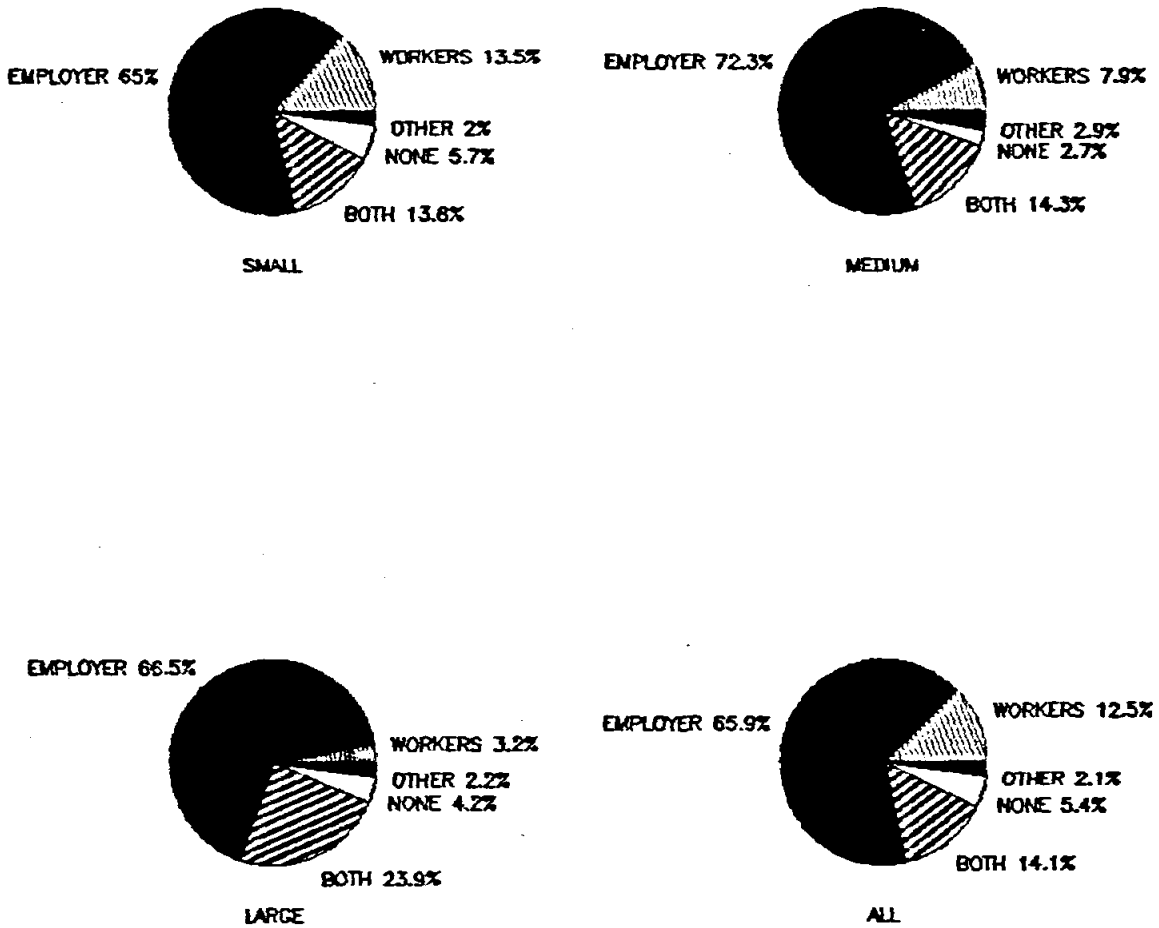


**FIGURE IV - 90**  
**PROPORTION OF WORKERS IN PLANTS WITH PROTECTIVE**  
**DEVICE POLICIES BY RESPONSIBILITY FOR MAINTENANCE**  
**(NOES 1981-1983)**





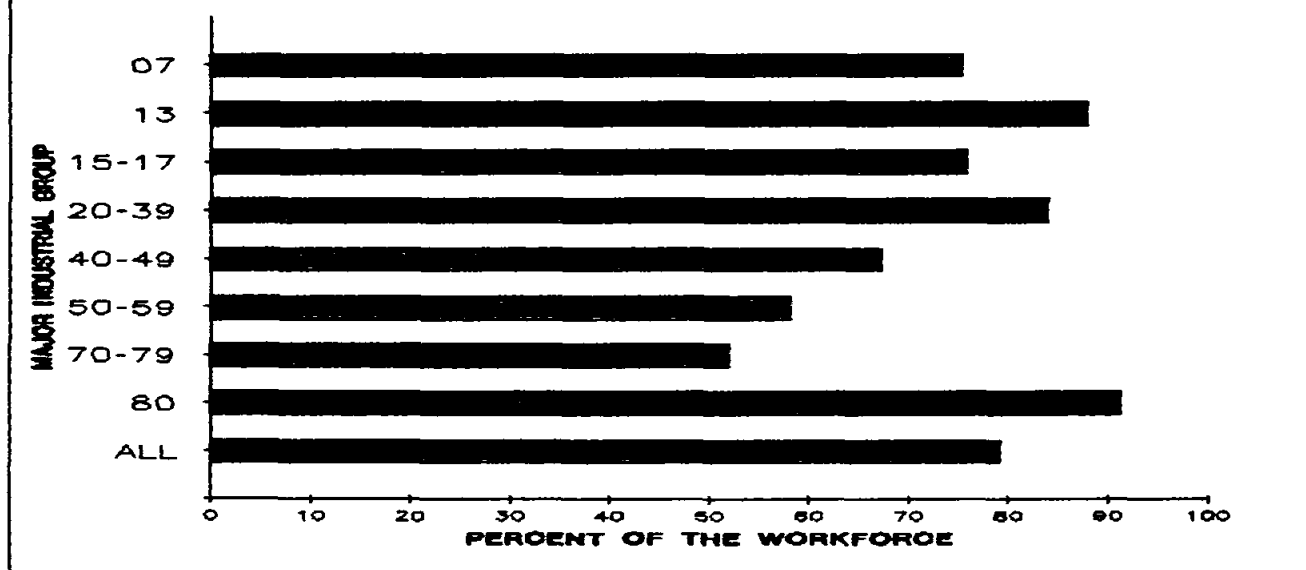
**FIGURE IV - 91**  
**PLANTS WITH PROTECTIVE DEVICE POLICIES**  
**BY ASSIGNED RESPONSIBILITY FOR MAINTENANCE**  
**(NOES 1981-1983)**





- Figure IV-96** Proportion of workers in plants which take action for improper use of protective devices
- Figure IV-97** Proportion of plants which take action for improper use of protective devices
- Table IV-65** Number and percent of plants and employees in plants which take corrective measures if workers use protective devices improperly (by major industrial group)
- Table IV-66** Number and percent of plants and employees in plants which take corrective measures if workers use protective devices improperly (by 2-digit SIC)

**FIGURE IV - 92**  
**WORKERS IN PLANTS WHICH TAKE CORRECTIVE ACTION**  
**TO ENFORCE PROPER USE OF PROTECTIVE DEVICES**  
**(NOES 1981-1983)**



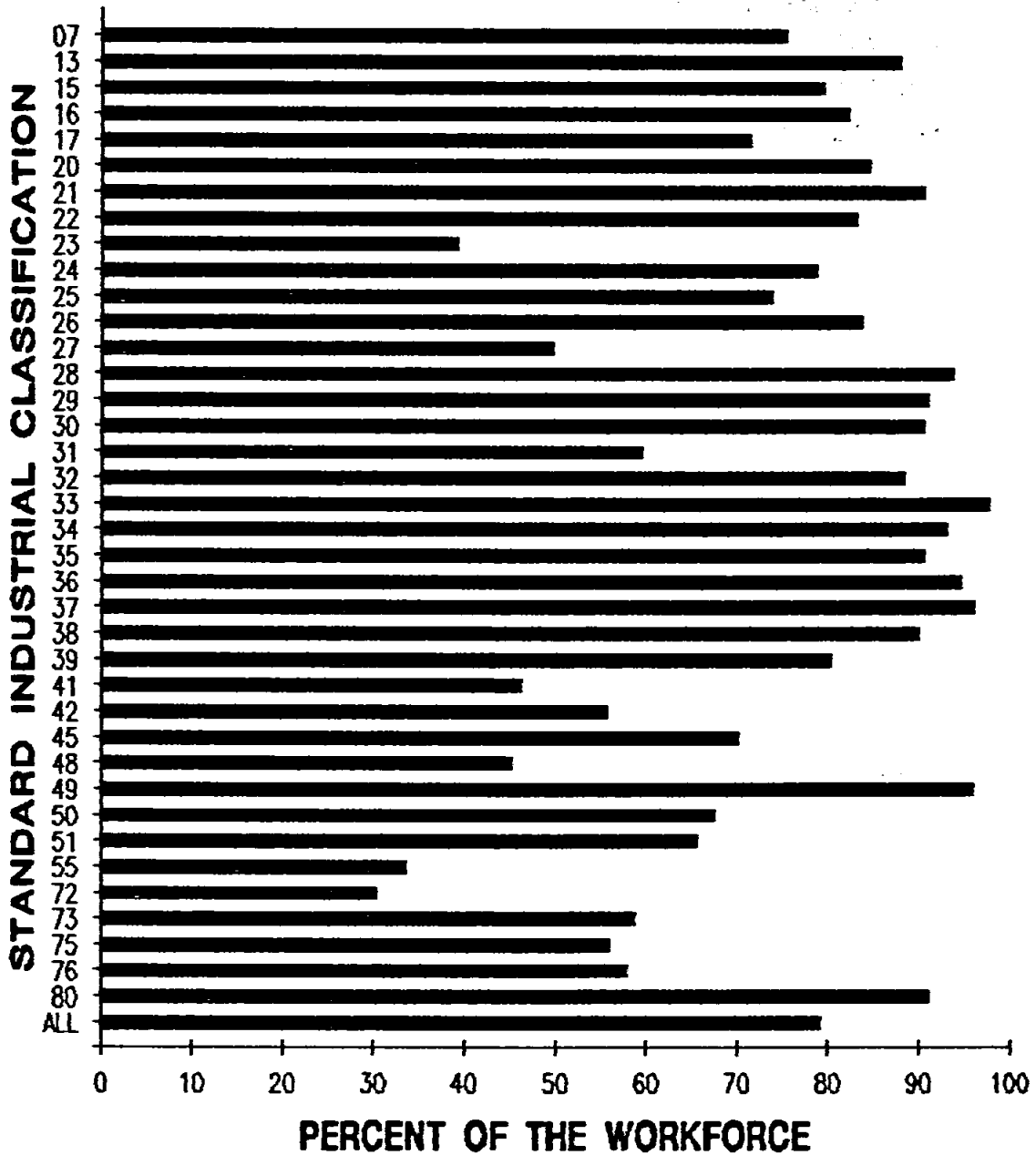
NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-65

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH TAKE  
 CORRECTIVE MEASURES IF WORKERS USE PROTECTIVE DEVICES IMPROPERLY

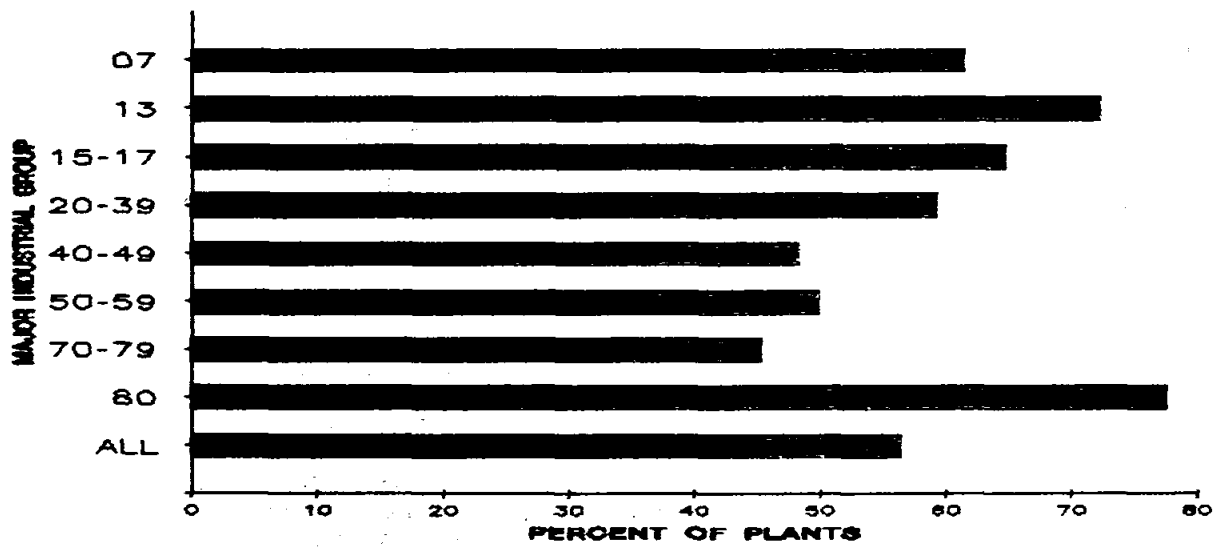
MAJOR GROUP	PLANTS			TOTAL	EMPLOYEES			TOTAL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)		SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	3397* (1144) 61.1%	70* (67) 100.0%	...	3468* (1131) 61.6%	76663* (27525) 73.9%	7009* (6680) 100.0%	...	83672* (26336) 75.6%
13	5932 (1204) 69.0%	1019* (331) 100.0%	46* (52) 100.0%	6996 (1348) 72.4%	159471 (24977) 76.3%	173943* (58021) 100.0%	31383* (35291) 100.0%	364796 (88496) 88.1%
15-17	60308 (2517) 63.9%	3538 (410) 85.4%	220* (131) 90.9%	64066 (2363) 64.9%	1479677 (62179) 70.5%	647212 (87652) 87.8%	207866* (98220) 88.1%	2334754 (124301) 76.0%
20-39	81179 (3455) 53.0%	26569 (1694) 83.7%	5925 (203) 94.5%	113673 (4278) 59.4%	2759414 (68211) 59.8%	5445915 (332511) 85.3%	8010827 (253578) 96.9%	16216156 (496218) 84.2%
40-49	23773 (2559) 44.7%	4587 (1011) 78.5%	410* (123) 87.5%	28770 (2699) 48.4%	752350 (90968) 52.5%	945762 (222785) 82.0%	439678 (101099) 76.6%	2137790 (272874) 67.6%
50-59	28648 (2849) 49.1%	1861* (509) 70.0%	...	30510 (2959) 50.0%	622703 (69201) 55.4%	272924* (74045) 66.8%	...	895627 (112963) 58.4%
70-79	33043 (3661) 45.2%	1169 (196) 49.8%	291* (139) 82.1%	34503 (3569) 45.5%	598101 (61627) 42.9%	261515 (44213) 56.3%	287464* (116266) 84.7%	1147080 (114683) 52.2%
80	1823* (636) 64.2%	1742 (246) 80.4%	1926 (279) 93.4%	5491 (617) 77.7%	72540* (20146) 71.4%	449183 (71966) 84.0%	2822890 (352024) 93.4%	3344612 (346937) 91.4%
ALL	238104 (7036) 53.0%	40555 (2129) 81.1%	8817 (416) 93.4%	287476 (7493) 56.5%	6520918 (164828) 58.9%	8203463 (428844) 83.2%	11800107 (472074) 94.6%	26524488 (700676) 79.4%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

**FIGURE IV - 93**  
**WORKERS IN PLANTS WHICH TAKE CORRECTIVE ACTION**  
**TO ENFORCE PROPER USE OF PROTECTIVE DEVICES**  
**(NOES 1981-1983)**



**FIGURE IV - 94**  
**PLANTS WHICH TAKE CORRECTIVE ACTION TO**  
**ENFORCE PROPER USE OF PROTECTIVE DEVICES**  
**(NOES 1981-1983)**



NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH TAKE  
CORRECTIVE MEASURES IF WORKERS USE PROTECTIVE DEVICES IMPROPERLY

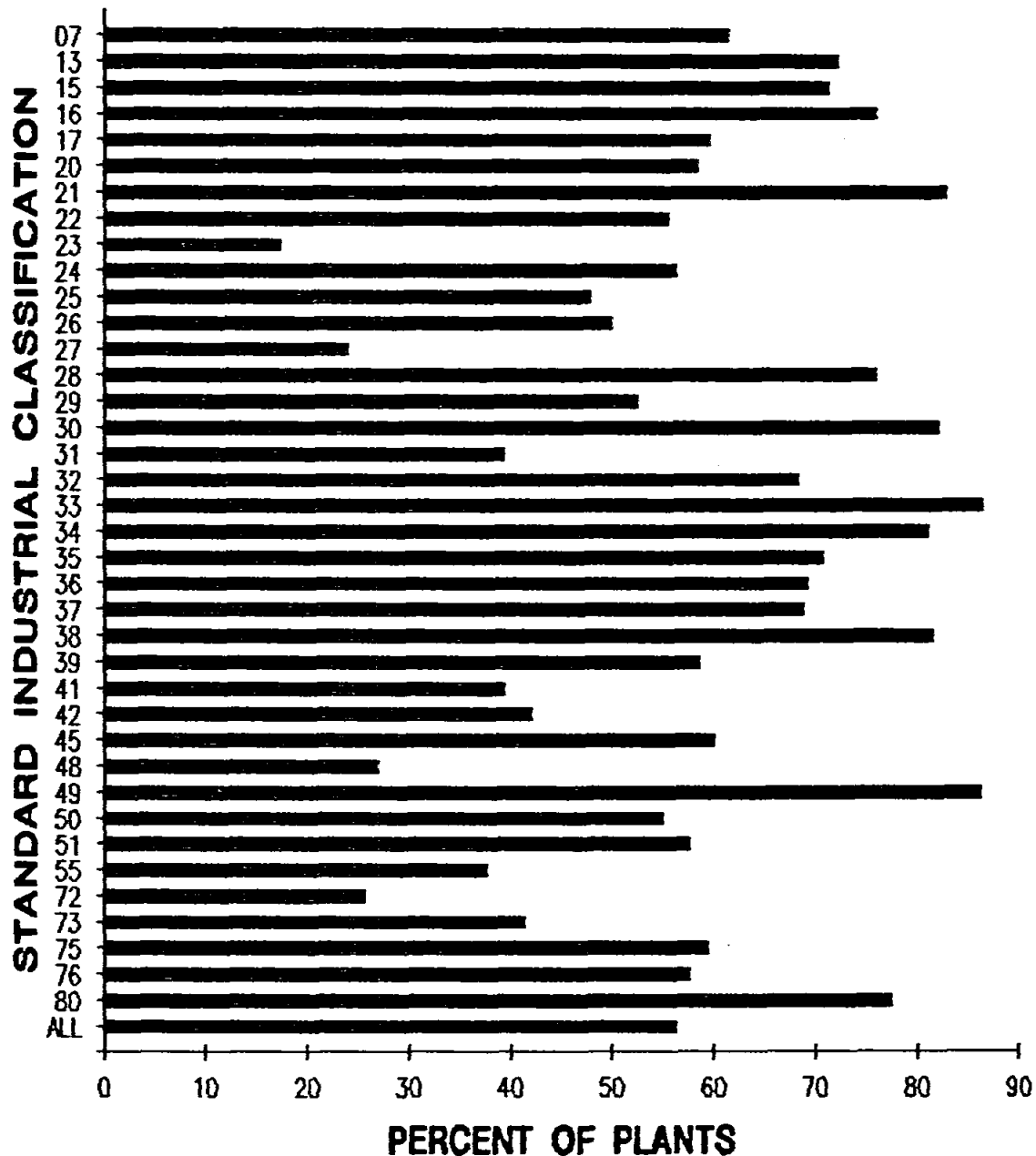
SIC CODE	PLANTS			TOTAL	EMPLOYEES			TOTAL
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)		SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	
07	3397* (1144) 61.1%	70* (67) 100.0%	...	3468* (1131) 61.6%	76663* (27525) 73.9%	7009* (6680) 100.0%	...	83672* (26336) 75.6%
13	5932 (1204) 69.0%	1019* (331) 100.0%	46* (52) 100.0%	6996 (1348) 72.4%	159471 (24977) 76.3%	173943* (58021) 100.0%	31383* (35291) 100.0%	364796 (88496) 88.1%
15	17631 (1552) 70.8%	934 (154) 84.4%	130* (98) 96.4%	18695 (1587) 71.5%	421745 (41663) 74.9%	173057 (35900) 87.3%	118577* (67614) 88.0%	713379 (93223) 79.6%
16	8484 (1397) 75.2%	952 (184) 85.1%	90* (66) 84.0%	9526 (1396) 76.1%	215214 (43928) 75.8%	184114 (42377) 88.6%	89288* (54040) 88.2%	488617 (78158) 82.4%
17	34193 (2163) 58.8%	1652 (379) 86.1%	...	35844 (2086) 59.7%	842718 (46721) 67.3%	290041* (74363) 87.6%	...	1132759 (74003) 71.6%
20	5499 (633) 48.2%	2830 (444) 88.0%	559 (121) 100.0%	8888 (790) 58.5%	210622 (20449) 54.2%	614181 (103816) 91.2%	491775 (104930) 100.0%	1316578 (113217) 84.7%
21	30* (43) 100.0%	...	60* (38) 76.1%	90* (50) 83.0%	1866* (2685) 100.0%	...	101476* (68062) 90.5%	103342* (67354) 90.7%
22	1175 (283) 40.1%	1210 (193) 76.2%	299* (80) 99.9%	2684 (392) 55.7%	50305* (14029) 47.4%	283804 (37212) 81.8%	261093* (94186) 100.0%	595201 (84282) 83.3%
23	1353* (482) 10.8%	1259 (181) 40.6%	169* (79) 69.9%	2782 (593) 17.5%	48581* (14966) 11.5%	276261 (38798) 45.3%	164313* (73101) 78.8%	489155 (90955) 39.4%
24	5558 (865) 51.9%	1082 (136) 94.2%	104* (74) 100.0%	6744 (849) 56.4%	190569 (27968) 62.8%	174437 (24113) 95.0%	92355* (52501) 100.0%	457361 (79781) 78.9%
25	1674* (425) 40.2%	773* (204) 72.8%	119* (75) 99.6%	2566 (513) 48.0%	59134 (14112) 42.5%	201403* (51827) 78.5%	122998* (62394) 100.0%	383534 (86115) 74.0%
26	1441 (259) 35.0%	1296 (254) 82.6%	214* (73) 100.0%	2951 (350) 50.1%	83023 (12383) 60.3%	235342 (50213) 83.6%	206864* (65220) 100.0%	525229 (93079) 83.9%
27	3509 (702) 19.4%	1161 (138) 62.0%	231* (87) 73.2%	4901 (693) 24.1%	121210 (20570) 25.4%	214101 (34252) 59.3%	255969* (66015) 74.0%	591279 (75628) 49.9%
28	4416 (502) 71.5%	1073 (113) 92.5%	380 (63) 100.0%	5868 (495) 76.1%	145528 (8516) 80.5%	239827 (34389) 91.9%	476341 (101388) 100.0%	861695 (118019) 93.9%
29	345* (232) 34.2%	293* (125) 100.0%	101* (42) 100.0%	740* (292) 52.7%	21404* (13620) 52.2%	63255* (21394) 100.0%	117545* (70259) 100.0%	202204* (80174) 91.2%
30	5285 (1054) 78.8%	1503* (387) 97.8%	180* (67) 80.3%	6968 (1221) 82.3%	185096 (26899) 82.3%	290201* (82179) 98.5%	208455* (70884) 89.2%	683752 (109498) 90.8%
31	223* (195) 24.0%	353* (96) 62.0%	25* (24) 100.0%	602* (231) 39.5%	5587* (4876) 22.5%	83836* (24931) 61.9%	15664* (16901) 100.0%	105087* (30759) 59.7%
32	5679 (1013) 64.5%	973 (146) 96.2%	184* (71) 99.9%	6836 (1061) 68.4%	175399 (13730) 74.0%	204667 (32074) 97.9%	128993* (49687) 100.0%	509060 (46950) 88.5%
33	3340 (525) 80.8%	1468 (138) 100.0%	337 (62) 100.0%	5145 (564) 86.6%	116347 (11231) 84.0%	311081 (30513) 100.0%	621499 (82456) 100.0%	1048927 (87795) 97.9%

SIC CODE					EMPLOYEES			
	SMALL (8-99)	PLANTS MEDIUM (100-499)	LARGE (>500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (>500)	TOTAL
34	14454 (1190) 78.0%	3056 (143) 97.9%	346 (83) 99.9%	17855 (1149) 81.2%	464504 (20010) 83.7%	585123 (24701) 98.1%	351056* (100266) 100.0%	1400683 (103578) 93.2%
35	15079 (1316) 66.6%	3190 (127) 93.7%	763 (79) 97.3%	19031 (1309) 70.9%	453035 (21931) 74.7%	618278 (17177) 93.5%	1090665 (144646) 98.0%	2161979 (142369) 90.8%
36	4092 (640) 57.6%	2468 (94) 91.9%	765 (169) 97.2%	7326 (666) 69.3%	170932 (18274) 74.2%	525565 (8247) 95.1%	1166735 (196541) 98.7%	1863232 (193046) 94.8%
37	2329 (511) 58.6%	1131 (99) 95.0%	390 (86) 93.7%	3850 (479) 69.0%	79444 (19416) 62.5%	232285 (27642) 97.1%	1499093 (246938) 99.0%	1810823 (244189) 96.3%
38	2116* (570) 78.7%	847 (100) 88.5%	361* (126) 86.7%	3323 (571) 81.8%	85460 (13596) 81.7%	170412 (23114) 87.7%	428568* (127647) 93.1%	684440 (137668) 90.1%
39	3582 (524) 54.7%	602* (1117) 75.5%	338* (216) 100.0%	4522* (1332) 58.8%	91369 (14196) 55.1%	121857* (227380) 81.5%	209369* (120490) 100.0%	422595* (208342) 80.5%
41	1697* (622) 38.4%	252* (136) 49.4%	...	1949* (685) 39.5%	57859* (20323) 49.2%	34499* (18593) 42.3%	...	92357* (32873) 46.4%
42	8250 (1372) 41.2%	775* (214) 52.3%	79* (54) 96.1%	9104 (1372) 42.2%	235622 (44773) 48.3%	150844* (41380) 58.3%	72864* (49190) 97.4%	459330 (62174) 55.9%
45	1699* (761) 52.4%	590* (397) 99.9%	108* (53) 73.2%	2396* (805) 60.2%	51939* (26200) 67.0%	109332* (75829) 100.0%	155960* (61157) 59.0%	317230* (98972) 70.3%
48	3522 (857) 24.0%	696 (165) 77.1%	18* (13) 52.4%	4235 (826) 27.1%	121977* (49808) 28.6%	136677* (38648) 77.5%	46280* (33466) 66.0%	304934 (62678) 45.4%
49	6822* (1760) 83.0%	1862* (567) 100.0%	173* (99) 99.8%	8856 (1962) 86.4%	237003 (58325) 88.0%	425470* (151076) 100.0%	146565* (65566) 100.0%	809038 (187353) 96.2%
50	16177 (1758) 53.3%	1533* (422) 85.1%	...	17710 (1871) 55.1%	383856 (55069) 60.9%	234499* (69502) 82.8%	...	618355 (103058) 67.7%
51	5161 (1163) 56.6%	237* (237) 100.0%	...	5398 (1263) 57.7%	112486* (32381) 60.8%	27013* (27013) 100.0%	...	139498* (48904) 65.8%
55	7311 (1572) 38.6%	91* (84) 14.7%	...	7402 (1603) 37.9%	126361* (32432) 40.9%	11413* (10448) 11.6%	...	137774* (37571) 33.8%
72	5192 (1266) 25.2%	299* (130) 44.3%	13* (19) 100.0%	5504 (1281) 25.8%	92968* (27214) 24.5%	40523* (18150) 49.3%	10670* (15114) 100.0%	144162* (40443) 30.5%
73	6599 (1355) 39.8%	775 (180) 52.0%	277* (131) 81.3%	7651 (1365) 41.6%	171310 (34158) 40.6%	200081 (43952) 57.2%	276793* (111017) 84.2%	648184 (116228) 58.9%
75	15586 (3027) 59.5%	59* (60) 99.7%	...	15645 (3034) 59.6%	228644 (42452) 55.3%	8238* (8380) 100.0%	...	236882 (43801) 56.2%
76	5667* (1466) 58.1%	36* (45) 29.4%	...	5703* (1487) 57.8%	105179 (23913) 58.9%	12672* (15755) 52.1%	...	117852* (32671) 58.1%
80	1823* (636) 64.2%	1742 (246) 80.4%	1926 (279) 93.4%	5491 (617) 77.7%	72540* (20146) 71.4%	449183 (71966) 84.0%	2822890 (352024) 93.4%	3344612 (346937) 91.4%
ALL	236320 (8959) 52.9%	40190 (954) 81.1%	8801 (351) 93.4%	285311 (9052) 56.4%	6472968 (171465) 58.7%	8130129 (140406) 83.2%	11791101 (485304) 94.6%	26394199 (546525) 79.4%

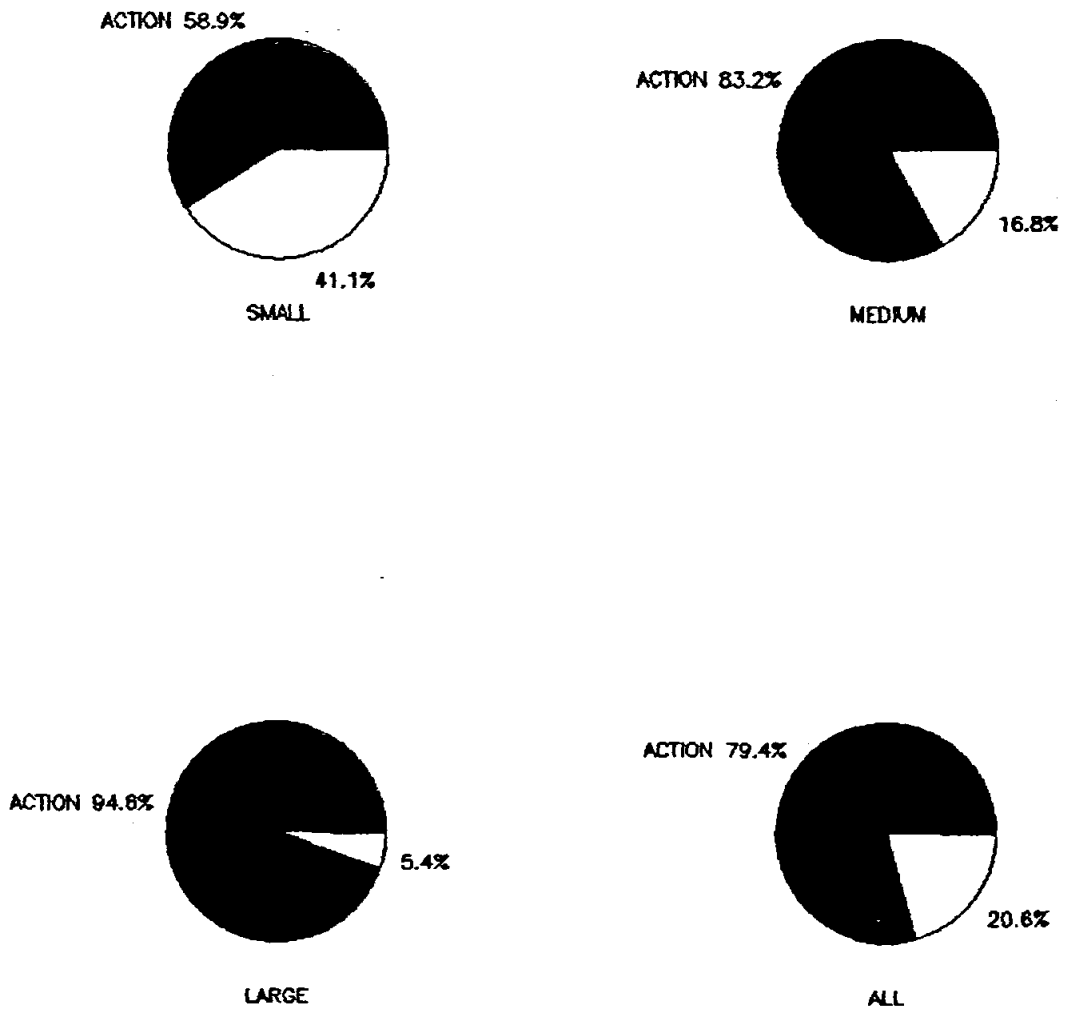
\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.



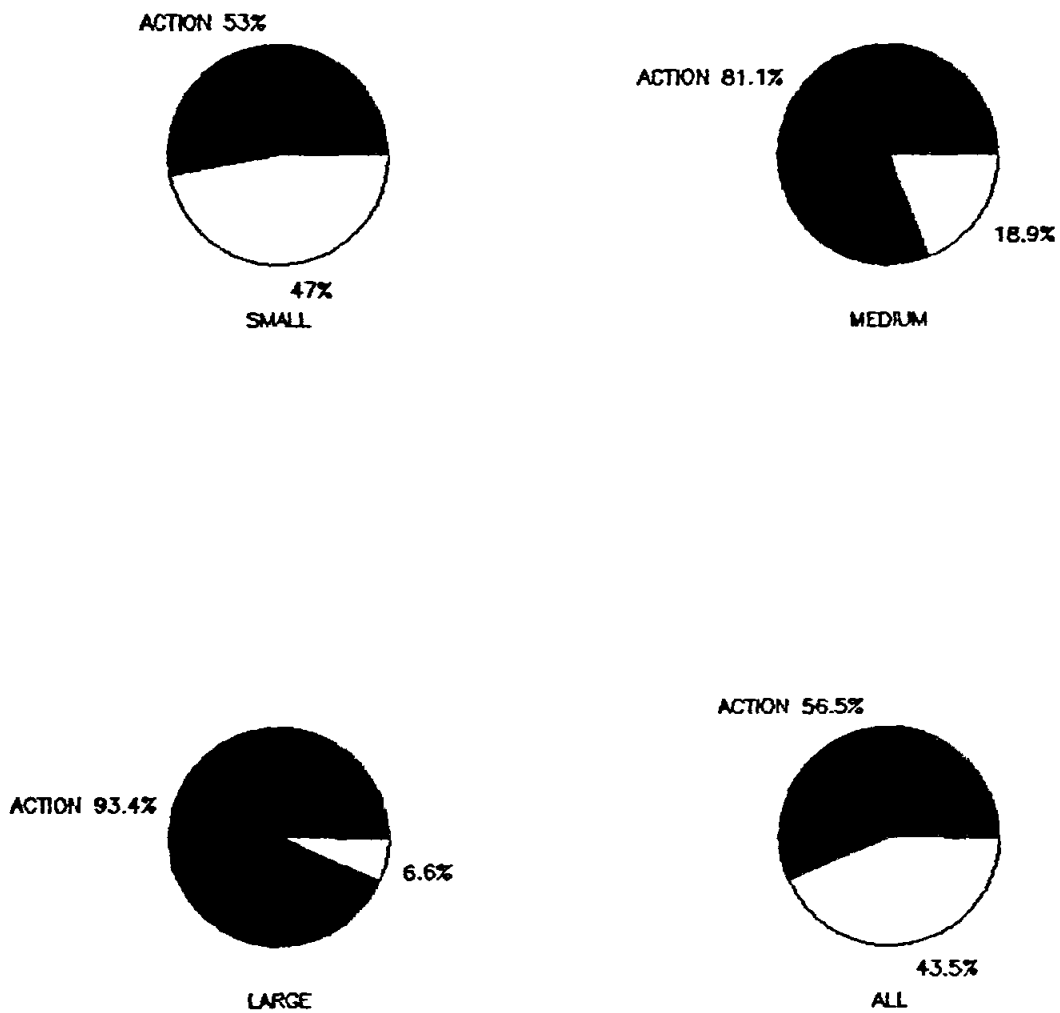
**FIGURE IV - 95**  
**PLANTS WHICH TAKE CORRECTIVE ACTION TO**  
**ENFORCE PROPER USE OF PROTECTIVE DEVICES**  
**(NOES 1981-1983)**



**FIGURE IV - 96**  
**PROPORTION OF WORKERS IN PLANTS WHICH TAKE**  
**ACTION FOR IMPROPER USE OF PROTECTIVE DEVICES**  
**(NOES 1981-1983)**



**FIGURE IV - 97**  
**PROPORTION OF PLANTS WHICH TAKE ACTION**  
**FOR IMPROPER USE OF PROTECTIVE DEVICES**  
**(NOES 1981-1983)**



**NOES QUESTIONNAIRE ITEM NO. 51**  
**Corrective Measures to Enforce Proper Use of Protective**  
**Gear Which Involve Economic Penalties**

**Intent**

The intent of this question was to determine to what extent workers were penalized by economic penalties for failure to comply with facility guidelines for the proper use of personal protective devices and equipment.

This item was displayed on the questionnaire as:

51. Do those corrective measures involve economic penalties?

- 1 Yes
- 2 No (Skip to Question 53)

**Notes**

This question was asked only if the interviewer received a positive response to the previous question regarding use of corrective measures.

Economic penalties were considered to be disciplinary actions taken by management which resulted in a financial loss to the affected worker. Examples of such actions are fines, dismissal, work hour reduction, suspension, or loss of seniority.

Actions not taken by management, such as union-sponsored sanctions, were regarded as a negative response.

Costs incurred by a worker, such as medical bills, as a consequence of failure to use protective gear properly, were not regarded as economic penalties.

**Analysis**

One analysis of the responses to question 51 is presented.

**Response 51.1 - Corrective measures involve economic penalties**

The estimates of the plants which impose economic penalties to enforce the proper use of personal protective devices, and workers in those plants (by number and proportion of the total) are displayed in Figures IV-98, IV-99, IV-100, and IV-101, and Tables IV-67 and IV-68.

**Figure IV-98** Proportion of plants which include economic penalties in their corrective measures to enforce protective device use

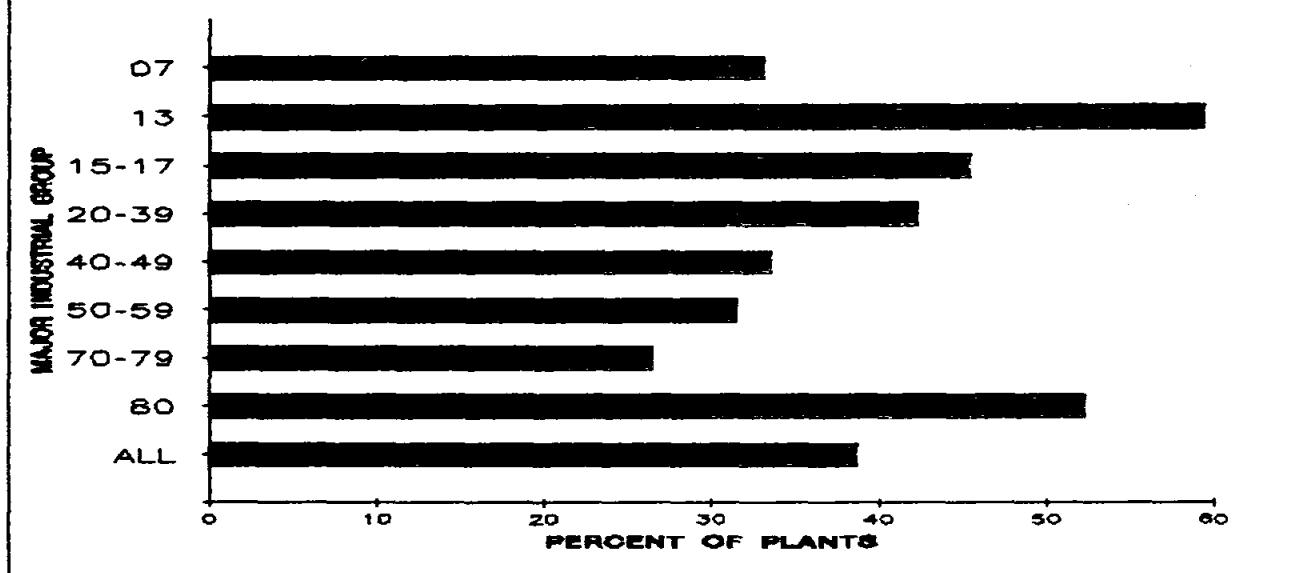
(by major industrial group)

**Figure IV-99** Proportion of plants which include economic penalties in their corrective measures to enforce protective device use

(by 2-digit SIC)

<b>Figure IV-100</b>	<b>Proportion of workers in plants which enforce protective device use with economic penalties</b>
<b>Figure IV-101</b>	<b>Proportion of plants which enforce protective device use with economic penalties</b>
<b>Table IV-67</b>	<b>Number and percent of plants and employees in plants which enforce protective device use with economic penalties (by major industrial group)</b>
<b>Table IV-68</b>	<b>Number and percent of plants and employees in plants which enforce protective device use with economic penalties (by 2-digit SIC)</b>

**FIGURE IV - 98**  
**PROPORTION OF PLANTS WHICH USE ECONOMIC**  
**PENALTIES TO ENFORCE PROTECTIVE DEVICE USE**  
**(NOES 1981-1983)**



NATIONAL OCCUPATIONAL EXPOSURE SURVEY (1981-1983) TABLE NO. IV-67

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH  
 ENFORCE PROTECTIVE DEVICE USE WITH ECONOMIC PENALTIES

MAJOR GROUP	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1806* (704) 32.5%	70* (67) 100.0%	...	1876* (690) 33.3%	41740* (16978) 40.3%	7009* (6680) 100.0%	...	48749* (16019) 44.0%
13	4747 (1147) 55.2%	961* (323) 94.3%	46* (52) 100.0%	5754 (1358) 59.6%	129336 (25601) 61.9%	163920* (56580) 94.2%	31383* (35291) 100.0%	324638* (91328) 78.4%
15-17	42022 (2559) 44.5%	2751 (319) 66.4%	220* (131) 90.9%	44993 (2444) 45.6%	1075485 (71635) 51.2%	500803 (69435) 67.9%	207866* (98220) 88.1%	1784153 (122092) 58.1%
20-39	53465 (2885) 34.9%	22633 (1455) 71.3%	5226 (244) 83.3%	81323 (3639) 42.5%	1984946 (59102) 43.0%	4625245 (297784) 72.5%	6905321 (384588) 83.5%	13515512 (604732) 70.2%
40-49	15759 (2337) 29.6%	3979 (897) 68.1%	308* (105) 65.7%	20046 (2470) 33.7%	566337 (79629) 39.5%	852154 (206417) 73.9%	348680* (87725) 60.8%	1767172 (253003) 55.9%
50-59	17761 (2897) 30.4%	1509* (391) 56.7%	...	19270 (2805) 31.6%	416315 (66124) 37.0%	232782* (63454) 56.9%	...	649097 (89310) 42.3%
70-79	18957 (2789) 25.9%	988 (209) 42.1%	221* (126) 62.6%	20166 (2763) 26.6%	352946 (52073) 25.3%	214705 (39555) 46.2%	217062* (99894) 63.9%	784713 (106486) 35.7%
80	751* (281) 26.4%	1342 (247) 62.0%	1617 (274) 78.5%	3710 (443) 52.5%	36251* (12003) 35.7%	348994 (74508) 65.3%	2337331 (349954) 77.3%	2722577 (342436) 74.4%
ALL	155267 (6196) 34.6%	34232 (1841) 68.5%	7638 (426) 80.9%	197137 (6583) 38.8%	4603356 (152109) 41.5%	6945612 (387934) 70.4%	10047643 (546756) 80.6%	21596611 (767980) 64.6%

\*Standard error >25% of the estimate. The estimate may be unreliable.  
 ...No facilities observed.

NUMBER AND PERCENT OF PLANTS AND EMPLOYEES IN PLANTS WHICH ENFORCE PROTECTIVE DEVICE USE WITH ECONOMIC PENALTIES

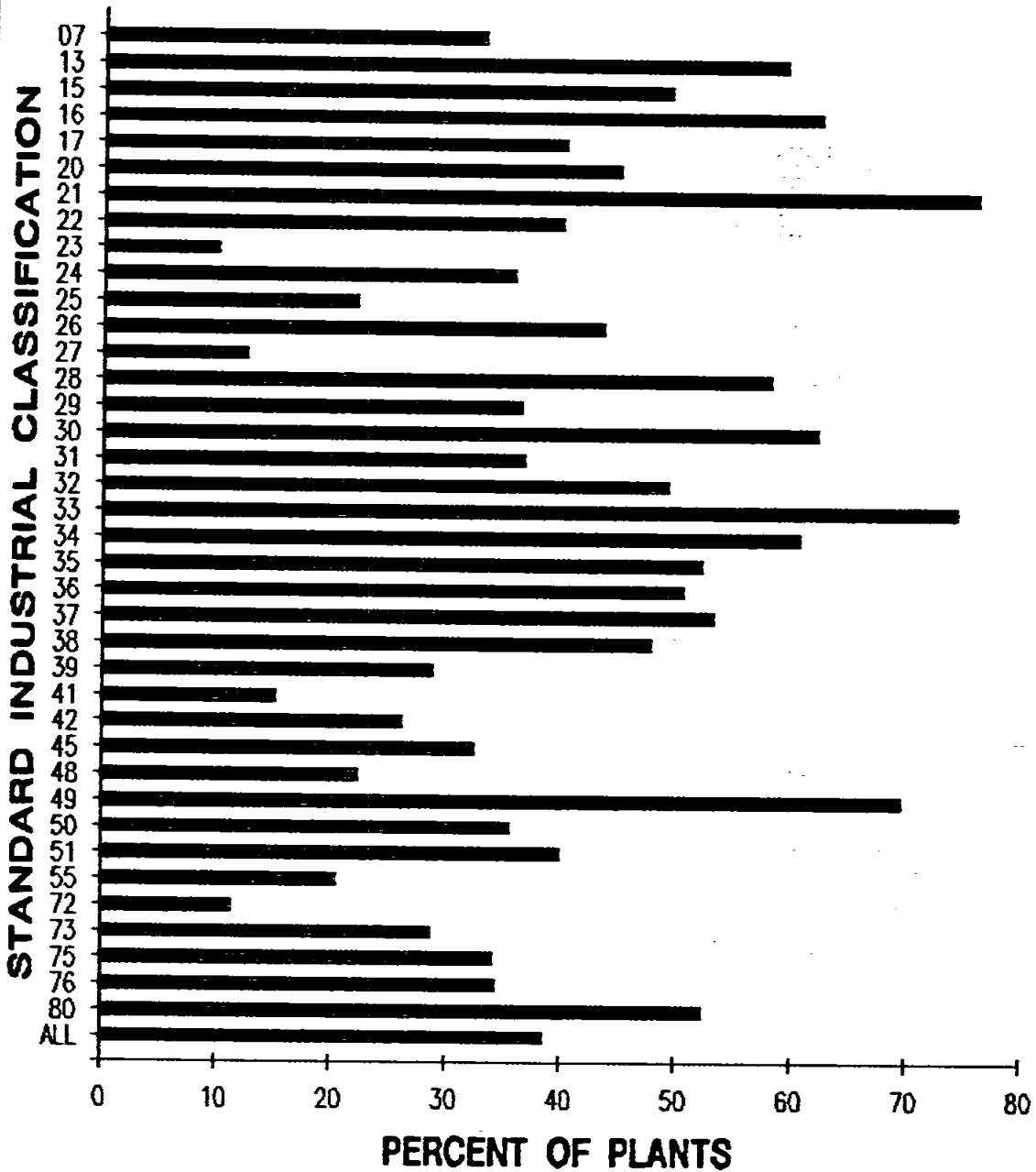
SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
07	1806* (704) 32.5%	70* (67) 100.0%	...	1876* (690) 33.3%	41740* (16978) 40.3%	7009* (6680) 100.0%	...	48749* (16019) 44.0%
13	4747 (1147) 55.2%	961* (323) 94.3%	46* (52) 100.0%	5754 (1358) 59.6%	129336 (25601) 61.9%	163920* (56580) 94.2%	31383* (35291) 100.0%	324638* (91328) 78.4%
15	11944 (1482) 47.9%	871 (148) 78.7%	130* (98) 96.4%	12946 (1503) 49.5%	287688 (38530) 51.1%	151257 (33712) 76.3%	118577* (67614) 88.0%	557523 (83138) 62.2%
16	7193 (1343) 63.7%	554* (162) 49.5%	90* (66) 84.0%	7837 (1361) 62.6%	184351 (38156) 64.9%	108591* (38835) 52.3%	89288* (54040) 88.2%	382230 (81344) 64.4%
17	22885 (1978) 39.4%	1325 (315) 69.7%	...	24211 (1893) 40.3%	603445 (50296) 48.2%	240955* (66631) 72.8%	...	844400 (69683) 53.3%
20	3772 (564) 33.1%	2561 (330) 79.6%	519 (106) 92.8%	6852 (721) 45.1%	156992 (20891) 40.4%	550748 (82137) 81.7%	470844 (98154) 95.7%	1178584 (112294) 75.8%
21	30* (43) 100.0%	...	53* (37) 66.7%	83* (50) 76.2%	1866* (2685) 100.0%	...	85457* (67004) 76.2%	87323* (66474) 76.6%
22	690* (230) 23.5%	986 (143) 62.1%	259* (84) 86.5%	1934 (334) 40.1%	32015* (11682) 30.2%	232700 (31104) 67.0%	196276* (79626) 75.2%	460990 (79216) 64.5%
23	530* (316) 4.2%	921 (172) 29.7%	153* (77) 63.4%	1604 (395) 10.7%	23445* (11819) 5.5%	202668 (40151) 33.2%	148618* (70595) 71.3%	374730 (81686) 30.2%
24	3296 (571) 30.8%	910 (161) 79.3%	104* (74) 100.0%	4310 (602) 36.0%	138003 (26964) 45.4%	140757 (25310) 76.7%	92355* (52501) 100.0%	371114 (76096) 64.0%
25	523* (204) 12.6%	553* (157) 52.0%	119* (75) 99.6%	1194* (301) 22.3%	26898* (10920) 19.3%	141756* (38760) 55.3%	122998* (62394) 100.0%	291652* (78055) 56.2%
26	1281 (245) 31.1%	1091 (265) 69.5%	203* (74) 94.8%	2575 (371) 43.7%	74849 (11881) 54.4%	207015* (52181) 73.5%	166625* (67320) 80.5%	448489 (99818) 71.6%
27	1511 (360) 8.3%	875 (153) 46.7%	196* (87) 62.0%	2582 (371) 12.7%	74823* (19909) 15.6%	163605 (31197) 45.3%	185403* (65500) 53.6%	423831 (75970) 35.8%
28	3162 (455) 51.2%	1015 (111) 87.5%	320 (64) 84.2%	4496 (440) 58.3%	111863 (13180) 61.9%	226336 (31032) 86.8%	407483* (111193) 85.5%	745682 (118233) 81.2%
29	249* (178) 24.6%	176* (71) 60.0%	91* (42) 90.5%	516* (212) 36.7%	17737* (11943) 43.3%	42572* (18214) 67.3%	101945* (71336) 86.7%	162254* (75800) 73.2%
30	3746 (876) 55.8%	1355 (313) 88.2%	180* (67) 80.3%	5282 (1052) 62.3%	145868 (21872) 64.8%	255354 (56699) 86.7%	208455* (70884) 89.2%	609676 (92285) 80.9%
31	223* (195) 24.0%	318* (88) 55.8%	22* (20) 87.3%	563* (218) 36.9%	5587* (4876) 22.5%	79130* (24213) 58.4%	11650* (10428) 74.4%	96367* (26819) 54.8%
32	3791 (899) 43.1%	967 (144) 95.6%	184* (71) 99.9%	4942 (922) 49.4%	117217 (17761) 49.4%	203087 (32287) 97.2%	128993* (49687) 100.0%	449297 (49854) 78.1%
33	2660 (578) 64.3%	1443 (137) 98.3%	324 (61) 96.0%	4427 (595) 74.5%	97407 (14080) 70.3%	305873 (29406) 98.3%	609529 (84534) 98.1%	1012809 (88722) 94.6%

SIC CODE	PLANTS				EMPLOYEES			
	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL	SMALL (8-99)	MEDIUM (100-499)	LARGE (≥500)	TOTAL
34	10593 (1354) 57.2%	2522 (262) 80.8%	262* (76) 75.9%	13377 (1282) 60.8%	356957 (30944) 64.3%	512330 (38696) 85.9%	286224* (88230) 81.5%	1155512 (83186) 76.9%
35	10659 (1356) 47.1%	2772 (226) 81.4%	630 (101) 80.3%	14060 (1322) 52.4%	330148 (28379) 54.4%	516460 (44475) 78.1%	834294 (128494) 75.0%	1680903 (127915) 70.6%
36	2704 (573) 38.1%	2012 (208) 74.9%	653* (169) 83.0%	5369 (607) 50.8%	127233 (18483) 55.2%	407594 (56648) 73.8%	910070 (158483) 77.0%	1444897 (172381) 73.5%
37	1666 (381) 41.9%	951 (119) 79.9%	363* (93) 87.2%	2979 (390) 53.4%	59742* (15772) 47.0%	200584 (33649) 83.9%	1448437 (234361) 95.7%	1708764 (237019) 90.9%
38	976* (356) 36.3%	711 (106) 74.3%	264* (125) 63.5%	1951 (352) 48.0%	42388* (11268) 40.5%	138218 (23818) 71.1%	286295* (127227) 62.2%	466901* (133094) 61.5%
39	1403* (495) 21.4%	496* (972) 62.2%	328* (221) 97.0%	2226* (1121) 29.0%	43908* (12552) 26.5%	98459* (200550) 65.9%	203369* (123186) 97.1%	345736* (184052) 65.9%
41	756* (389) 17.1%	...	...	756* (389) 15.3%	23864* (13056) 20.3%	...	...	23864* (13056) 12.0%
42	4890 (1029) 24.4%	732* (216) 49.4%	54* (43) 65.4%	5676 (1059) 26.3%	152483 (31500) 31.3%	145158* (42135) 56.1%	52752* (40652) 70.5%	350393 (51122) 42.7%
45	608* (436) 18.8%	590* (397) 99.9%	98* (49) 66.7%	1296* (581) 32.6%	27019* (22001) 34.9%	109332* (75829) 100.0%	144558* (56302) 54.7%	280909* (100309) 62.3%
48	2960* (1049) 20.1%	558 (133) 61.8%	3* (4) 10.1%	3521* (1033) 22.5%	113891* (51095) 26.8%	109267* (35687) 62.0%	13226* (14092) 18.9%	236384* (63576) 35.2%
49	5169* (1674) 62.9%	1862* (567) 100.0%	120* (90) 69.2%	7151* (1892) 69.8%	204398* (58006) 75.9%	425470* (151076) 100.0%	120133* (61318) 82.0%	750001 (181782) 89.1%
50	10215 (1621) 33.7%	1272* (336) 70.6%	...	11487 (1653) 35.7%	252615 (43798) 40.1%	205769* (62806) 72.6%	...	458384 (88214) 50.2%
51	3509* (1219) 38.5%	237* (237) 100.0%	...	3746* (1305) 40.1%	77179* (33099) 41.7%	27013* (27013) 100.0%	...	104191* (47716) 49.1%
55	4037* (1370) 21.3%	...	...	4037* (1370) 20.7%	86521* (32275) 28.0%	...	...	86521* (32275) 21.2%
72	2140* (819) 10.4%	299* (130) 44.3%	13* (19) 100.0%	2452* (848) 11.5%	45651* (18828) 12.0%	40523* (18150) 49.3%	10670* (15114) 100.0%	96845* (35615) 20.5%
73	4514* (1345) 27.2%	594* (165) 39.9%	208* (121) 61.0%	5316* (1378) 28.9%	110500* (35246) 26.2%	153271 (34627) 43.8%	206392* (96183) 62.8%	470162 (98427) 42.7%
75	8931 (1906) 34.1%	59* (60) 99.7%	...	8990 (1918) 34.3%	132706 (27546) 32.1%	8238* (8380) 100.0%	...	140944 (29957) 33.4%
76	3372* (861) 34.6%	36* (45) 29.4%	...	3408* (878) 34.5%	64090* (17021) 35.9%	12672* (15755) 52.1%	...	76762* (24566) 37.9%
80	751* (281) 26.4%	1342 (247) 62.0%	1617 (274) 78.5%	3710 (443) 52.5%	36251* (12003) 35.7%	348994 (74508) 65.3%	2337331 (349954) 77.3%	2722577 (342436) 74.4%
ALL	153892 (6692) 34.5%	34043 (996) 68.7%	7622 (418) 80.9%	195557 (7283) 38.7%	4558673 (160066) 41.4%	6898291 (185579) 70.6%	10038638 (609056) 80.6%	21495602 (723888) 64.6%

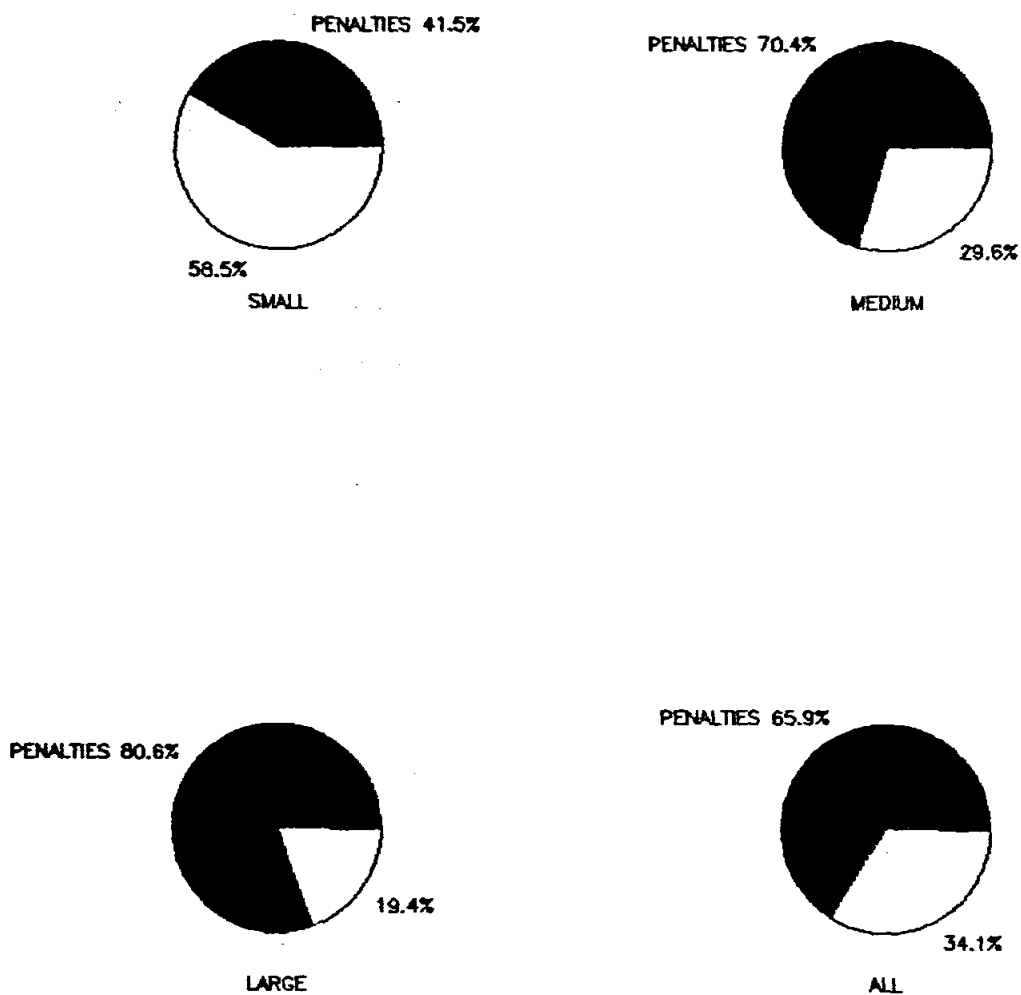
\*Standard error >25% of the estimate. The estimate may be unreliable.  
...No facilities observed.



**FIGURE IV - 99**  
**PROPORTION OF PLANTS WHICH USE ECONOMIC**  
**PENALTIES TO ENFORCE PROTECTIVE DEVICE USE**  
**(NOES 1981-1983)**



**FIGURE IV - 100**  
**PROPORTION OF WORKERS IN PLANTS WHICH ENFORCE**  
**PROTECTIVE DEVICE USE WITH ECONOMIC PENALTIES**  
**(NOES 1981-1983)**



**FIGURE IV - 101**  
**PROPORTION OF PLANTS WHICH ENFORCE PROTECTIVE**  
**DEVICE USE WITH ECONOMIC PENALTIES**  
**(NOES 1981-1983)**

