NATIONAL OCCUPATIONAL EXPOSURE SURVEY

FIELD GUIDELINES

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FOREWORD

The National Institute for Occupational Safety and Health (NIOSH), Division of Surveillance, Hazard Evaluations and Field Studies, Surveillance Branch, Hazard Section conducted the National Occupational Exposure Survey (NOES) from 1981-1983. The sample of businesses surveyed in the NOES consists of 4,490 establishments in 98 different geographic locations throughout the United States. The set of surveyed facilities was designed to be representative of virtually all the non-agricultural, non-mining, and non-governmental businesses covered under the Occupational Safety and Health Act of 1970.

Like its predecessor, the National Occupational Hazard Survey (NOHS), which was conducted from 1972-1974, the NOES was designed to provide the data necessary to describe potential exposure agents and profile health and safety programs in American workplaces. Specifically, the survey provides data on potential occupational exposures to chemical, physical, and biological agents, and permits an analysis of the changes in the workplace since the NOHS.

The material presented here is a compilation of the instructions originally provided to the NOES surveyors and is intended as a reference for those evaluating the survey data and the procedures used in collecting and recording information.

I. ABSTRACT

The National Occupational Exposure Survey (NOES) was a nationwide data gathering effort designed to develop a base of data which would support the development of estimates of the number of workers potentially exposed to various chemical, physical and biological agents, and describe the distribution of those potential exposures. Data relating to in-plant health and safety programs were also collected. An ancilliary objective was to compile the data in such a way that analysis of potential exposure trends would be possible by comparing NOES data with similar data in the National Occupational Hazard Survey (NOHS).

Field investigations began in November 1980 and continued for the next 30 months. Trained surveyors conducted on-site visits to each facility in the sample to administer a questionnaire to plant management, to observe processes and operations, and to record potential exposures to all employees.

Walk-through investigations were conducted in 4,490 facilities in 523 different industry types employing approximately 1,800,000 workers in 410 occupational categories. More than 10,000 different potential exposure agents and over 100,000 unique tradename products were seen during the on-site visits.

This manual presents historical information, instructions and procedures provided to the NOES surveyors. It is intended as a reference for evaluating the survey data, the survey procedures, and the data collection guidelines.

CONTENTS

CONTENTS (Cont.)

FIGURES

TABLES

II. ACKNOWLEDGEMENTS

The individuals who collected data during this field survey deserve special recognition. They were asked to endure the rigors of transitory assignments in a variety of geographic settings. Their work took them into a broad spectrum of worksites where they encountered a staggering array of potential exposure agents. The National Occupational Exposure Survey owes much to their grace under pressure, their persistence in the face of adversity, and their commitment to the goals of the survey.

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III. INTRODUCTION

The basic objective of the National Occupational Exposure Survey (NOES) was to collect data systematically on all potential occupational exposure agents observed in a structured sample of establishments. This data gathering activity has produced a base of information which can be used to identify areas where further occupational health and safety research is warranted. Consisting, as it does, of observational data on potential occupational exposures to a wide range of chemical, physical, and biological agents, the NOES is unique.

This manual is intended both as a basic background document to be referenced by those using data from the NOES, and as a guide to others who may undertake a large-scale data-gathering activity designed to compile information on potential exposure agents. Because of this dual purpose, the manual treats in some detail the specific history of this survey, methods of training field surveyors, and techniques for scheduling and sequencing facility surveys. Later sections of the manual deal with the more readily generalized aspects of the survey, including basic definitions of terms and instructions for preparing the survey forms.

IV. HISTORY

An in-depth analysis of the historical information available from the National Occupational Hazard Survey (NOHS) was the starting point in planning for the National Occupational Exposure Survey (NOES).

Basic concepts of the NOES were not radically different from the NOHS. The primary objective was to provide a national profile of potential exposures to workplace hazards. The basic sample design of the survey was modified to improve the statistical validity of the results. The recruiting, hiring, training and utilization of field personnel for the NOES was also modified to improve the quantity and quality of the data and to minimize the time spent in collecting data.

A. Recruiting

Each of the 20 NOHS surveyors was contacted in an effort to elicit comments regarding the conduct of the first survey. Their comments pertaining to travel, living accommodations, per diem, assignments, working conditions, rapport and communications with survey Headquarters were informative and useful inputs in the initial planning process. Most of the surveyor's complaints and difficulties appeared to stem from a feeling of isolation during the field phase of the survey and a perceived lack of contact with survey Headquarters personnel.

There was a lack of extensive historical information pertaining to right of entry problems and warrant procedures. The best information available indicated that there were very few company officials who refused to cooperate or challenged a NIOSH employee's statutory right to enter the facility to conduct research. In planning the NOES, however, it was anticipated that right of entry and warrant situations would be more frequent. Procedures for handling these special situations are discussed in Section VI.

From March 1979, through September 1979, numerous planning sessions were held to evaluate and discuss field staff requirements and activities. It was decided that:

- 21 surveyors would be hired.
- Surveyors would be deployed in teams.
- The surveyors would be recruited from the industrial hygiene, occupational health or biological science fields. A minimum of 15 to 30 quarter credit hours of college-level chemistry or its equivalent would be required.
- All surveyors would receive specialized training (explained in Section V).
- Each team would have an industrial hygienist team leader whose education and/or experience would be commensurate with grade-level GS-11 or higher.

The team leader positions were critical. It was decided that the leader would:

- Function as a first-line supervisor.
- Make all arrangements for accommodations and travel for the team.
- Provide technical guidance and expertise as needed.
- Assign facilities to all surveyors.
- Periodically accompany surveyors on site visits as an observer for the express purpose of evaluating the surveyor's performance and adherence to survey guidelines.
- Conduct staff meetings at least weekly to enhance communication and resolve difficulties.
- Carefully review all completed survey forms prior to transmittal to survey Headquarters.
- Act as a liaison between the field staff and survey Headquarters.
- Resolve, if possible, right of entry problems.
- Initiate warrant procedures.
- Obtain replacement facilities from survey Headquarters.

It was estimated that administrative and supervisory duties would account for approximately 75% of the team leader's time. In addition to administrative and supervisory duties, the team leader was expected to conduct three or four surveys of moderately sized facilities in each geographical area or Primary Sampling Unit (PSU) assigned to the team. The first team leader/surveyor was hired in November, 1979, and reported for duty in December of that same year.

Position descriptions for surveyors, vacancy announcements and other notices were sent to numerous colleges throughout the United States, to the Office of Personnel Management of the U.S. Government (Civil Service), the Public Health Service Commission Corps, and the employment advertisement and notification committee of the American Industrial Hygiene Conference (AIHC). Approximately 75 applicants responded to the vacancy announcements. Applicants were rated by the Civil Service Commission and eligible candidates were contacted for a personal interview. In May, 1980, representatives of the Hazard Section attended the American Industrial Hygiene Conference in Houston, Texas. Position descriptions were posted in the employment opportunity suite in an effort to attract as many eligible applicants as possible. Approximately 30 interviews were held during that week.

Between March and July, 1980, 14 surveyors were hired; two each in March, April, May and July, and six in June. The two surveyors hired in March terminated their employment prior to the start of training at the Occupational Safety and Health Administration Training Institute in Chicago, Illinois. After the in-house training period but prior to the field start date, three other surveyors resigned and one surveyor was hired. On November 3, 1980, ten surveyors and the team leader traveled to Chicago, Illinois, to begin the field investigation phase of the NOES.

Eight weeks after the field investigation phase started, three more surveyors were hired, trained and sent to meet the team in Los Angeles, California to receive additional on-the-job training. After this training these surveyors became functional members of the field staff. Another surveyor resigned in January, 1981. Additional surveyors were hired and reported for field duty as presented in Table 1.

B. Turnover

During the planning cycle, it was estimated that surveyor turnover during the field phase would be less than 20% in the first year and approximately 70% over the two-year period. In the first year, five of the eleven original surveyors resigned, resulting in a 45% turnover rate. Through the two-year period, a 73% turnover rate was realized. Calculating a turnover rate based only on the original surveyors, however, does not present an accurate assessment of this personnel problem.

Personnel hiring limits were more restrictive than assumed during the planning phase making it impossible to acquire a full staff of 21 surveyors. Furthermore, candidates willing to commit to a project requiring 100% travel for a two-year period were difficult to locate. Fortunately, a total of 15 surveyors expressed a sincere commitment to the project and its requirements. Only seven surveyors, however, fulfilled their full 2-year commitment, yielding a 53% turnover rate.

Due to the limited number of field staff, it was obvious that facility surveys would not be completed as scheduled unless additional surveyors could be hired. Survey Headquarters staff were assigned to conduct surveys until other surveyors could be recruited, hired and trained. In 1982, seven surveyors were hired for 15 months and seven surveyors for a 12-month period. These additional surveyors reported for field work and on-the-job training in March and May respectively. In May of 1982, a full team of surveyors were in the field conducting surveys. The size of the field staff remained relatively constant until March, 1983.

C. Scheduling

At the start of the field investigation phase in Chicago, Illinois, several initial start-up problems surfaced, but were quickly rectified. For example, notification letters to companies failed to arrive before the surveyors initial contact was made, and survey

TABLE 1. NOES SURVEYORS

		1980		1981												1982												1983					
SURVEYOR	FIELD DATES	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
A	11/80-03/83	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
B	11/80-04/82	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X															
C	11/80-04/82	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X															
D	01/81-03/83			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
E	02/81-06/83				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
F	11/80-11/82	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X								
G	11/80-09/81	X	X	X	X	X	X	X	X	X	X	X																					
g	05/82-08/82																			X	X	X	X										
H	11/80-01/81	X	X	X																													
h	02/82-03/83																X	X	X	X	X	X	X	X	X	X	X	X	X	X			
I	11/80-08/81	X	X	X	X	X	X	X	X	X																							
J	03/81-03/83					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
K	11/80-04/82	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X															
L	11/80-03/83	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
M	11/80-06/81	X	X	X	X	X	X	X	X																								
m	05/82-03/83																			X	X	X	X	X	X	X	X	X	X	X			
N	11/80-07/81	X	X	X	X	X	X	X	X																								
n	05/82-02/83																			X	X	X	X	X	X	X	X	X	X				
O	05/82-03/83																			X	X	X	X	X	X	X	X	X	X	X			
P	05/82-03/83																			X	X	X	X	X	X	X	X	X	X	X			
p	01/81 3-4/81																																
P	06/81			X		X	X		X																								
Q	05/82-02/83																			X	X	X	X	X	X	X	X	X	X				
R	02/81-06/83				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
S	03/82-04/83																	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
T	03/82-04/83																	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
U	05/82-09/82																			X	X	X	X	X									
V	03/82-04/83																	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
W	03/82-04/83																	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
X	03/82-04/83																	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Y	05/82-05/83																			X	X	X	X	X	X	X	X	X	X	X	X	X	
Z	03/82-07/83																	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	TOTALS	11	11	13	13	15	15	14	15	12	11	11	10	10	10	10	11	17	14	22	22	22	22	21	20	19	19	19	19	17	9	4	3

scheduling required more effort and time than expected. Initially, refusals and potential warrant situations were significantly higher than anticipated. Headquarter staff responsibilities and assignments in support of the surveyors were more clearly defined and streamlined to address these problems.

Headquarter staff responsibilities were categorized into three areas; travel, per diem, vouchers and other similar activities were assigned to the secretarial staff; replacement facilities, warrants, facility computer listings, contact with the sample design contractor, etc. was assigned to the senior programmer specialist; field personnel assignments, recruiting, PSU sequencing and other operational management activities were delegated to the alternate project officer.

PSU sequencing and team assignments (Tables 2 and 3) were critical elements of the NOES. Facility listings from the sample design contractor had to be received far enough in advance to:

1. Notify NIOSH Regional Offices.

2. Notify company representatives that their facility had been selected for participation in the Survey.

3. Notify team leaders and surveyors of their future assignments.

4. Permit team leaders sufficient time to make arrangements for travel and living accommodations.

5. Allow surveyors flexibility in scheduling their site visits.

Upon receipt of the facility listing for the next PSU assignment, team leaders were instructed to distribute the facility assignments to each surveyor. The surveyor would, as time permitted, contact and schedule as many facilities as possible before arrival in the next PSU. This procedure, in effect, maximized surveyor efficiency, enhanced work schedule flexibility, and provided sufficient time for refusals, warrants and other problems to be dealt with.

Time required to complete activities in a PSU and travel costs between PSU's were important inputs in the PSU sequencing strategy. The first three PSU's surveyed (Chicago, Detroit, Los Angeles) were large. Team workload was more than the staff could complete in a one month period. Per diem regulations and GSA rental restrictions were major factors in limiting the stay in a PSU to a maximum of three or four weeks. If all facility surveys were not completed, the PSU was rescheduled for a return visit at a later date.

Effort was made to minimize travel time and costs between PSU assignments. Travel day(s) proved to be a disruptive and unsettling experience for the surveyors. Packing, shipping luggage and equipment, waiting in airports, unpacking at the new location, renting cars, purchasing maps of the city, etc., were factors which contributed to surveyor dissatisfaction. The anticipation of travel

to a more favorable geographic area, however, was instrumental in reducing travel day dissatisfaction.

After Chicago and Detroit, PSU sequencing took the following pattern: West, Northwest, Southwest, South, East, Northeast, Midwest, and was then repeated. This pattern of travel remained constant, with few exceptions, for the duration of the survey. Periodic modifications were necessary during the later stages of the survey in order to complete the required number of survey sites in designated geographical areas.

Completing the field phase of NOES in two years was an achievable goal if:

1. Productivity was consistent with expectations.

2. Employee turnover rate was low (20%)

3. A full complement of surveyors remained in the field.

NOES productivity is graphically presented in Tables 4 and 5. Table 4 illustrates the average number of facilities completed per surveyor per month. Table 5 presents the total number of surveys conducted per month for all surveyors. Table 6 indicates the average time of several survey tasks for all surveyors and all facilities and displays the average time for each component by facility size.

NOHS statistics were:

1. Average of 20 surveyors/month for 24 months.

2. 4,636 facilities completed with 860,000 employees on payroll.

3. 9.65 (average) completed surveys/surveyor/month.

NOES statistics were:

1. Average of 15 surveyors/month for 30 months.

2. 4,490 facilities completed with 1.8 million employees on payroll.

3. 9.85 (average) completed surveys/surveyor/month.

D. Teams

There was only one survey team during the first three months of the survey for reasons previously stated. Two teams were formed in February, 1981, and remained relatively intact for the next twelve months. With more field personnel available in the second year, the number of teams increased to four. At the same time, several surveyors worked alone to complete unfinished PSU's, small

PSU's (less than 2 person-weeks of work) and large facilities that had been difficult to schedule.

During the last three months of the survey, surveyors worked independently and traveled extensively in an effort to complete the field investigations. Most of the facilities during this period were large facilities (over 5,000 employees) that had been temporarily closed, or had initially refused to voluntarily participate.

TABLE 2. NUMBER OF FACILITIES SURVEYED BY MONTH BY PSU

Date	PSU Site Number	No. Facilities Surveyed/PSU	Facility Total/Month
November, 1980	310	69	71
	999*	2	
December, 1980	320	50	56
	999*	6	
January, 1981	710	102	108
	999*	6	
February, 1981	710	2	134
	720	35	
	731	54	
	801	39	
	999*	4	
March, 1981	381	3	185
	520	11	
	530	38	
	617	1	
	731	1	
	761	32	
	801	3	
	804	37	
	805	57	
	999*	2	
April, 1981	381	1	142
	120	20	
	214	17	
	520	17	
	530	1	
	601	15	
	617	26	
	804	4	
	808	37	
	999*	4	
May, 1981	110	20	120
	120	23	
	201	1	
	205	19	
	214	2	
	330	5	
	340	27	
	611	14	
	624	3	
	999*	6	

TABLE 2. NUMBER OF FACILITIES SURVEYED BY MONTH BY PSU (Cont.)

Date	PSU Site Number	No. Facilities Surveyed/PSU	Facility Total/Month
June, 1981	201	23	184
	330	22	
	371	37	
	406	12	
	407	25	
	412	19	
	414	3	
	606	13	
	624	21	
	999*	9	
July, 1981	310	19	165
	381	34	
	160	15	
	406	1	
	414	2	
	415	25	
	561	36	
	606	10	
	624	1	
	710	15	
	999*	7	
August, 1981	320	1	127
	381	2	
	160	4	
	203	29	
	402	10	
	409	12	
	417	16	
	619	5	
	627	36	
	999*	12	
September, 1981	150	11	156
	203	3	
	207	36	
	330	18	
	409	14	
	411	23	
	417	6	
	622	41	
	999*	4	
October, 1981	120	44	153
	150	48	
	211	40	
	330	10	

TABLE 2. NUMBER OF FACILITIES SURVEYED BY MONTH BY PSU (Cont.)

Date	PSU Site Number	No. Facilities Surveyed/PSU	Facility Total/Month
	622	8	
	999*	3	
November, 1981	381	1	117
	120	8	
	142	12	
	150	2	
	202	29	
	204	30	
	211	7	
	212	21	
	999*	7	
December, 1981	142	18	84
	150	3	
	202	10	
	204	1	
	209	30	
	212	13	
	999*	9	
January, 1982	110	15	142
	142	9	
	208	1	
	710	110	
	999*	7	
February, 1982	110	14	92
	207	1	
	212	1	
	710	1	
	742	22	
	802	11	
	806	28	
	809	11	
	999*	3	
March, 1982	604	2	120
	610	23	
	631	16	
	752	16	
	802	34	
	806	1	
	807	6	
	808	2	
	809	11	
	999*	9	

TABLE 2. NUMBER OF FACILITIES SURVEYED BY MONTH BY PSU (Cont.)

Date	PSU Site Number	No. Facilities Surveyed/PSU	Facility Total/Month
April, 1982	603	6	104
	604	13	
	605	22	
	607	31	
	610	3	
	613	7	
	752	5	
	807	10	
	808	1	
	999*	6	
May, 1982	552	8	118
	603	21	
	604	3	
	609	37	
	613	18	
	616	14	
	628	12	
	999*	5	
June, 1982	552	22	181
	602	20	
	608	25	
	609	3	
	616	12	
	618	19	
	623	38	
	629	37	
	999*	5	
July, 1982	110	44	201
	340	26	
	404	26	
	602	5	
	612	8	
	615	27	
	618	5	
	620	34	
	625	8	
	803	17	
	999*	1	
August, 1982	310	13	238
	110	54	
	120	2	
	142	1	
	150	1	
	212	1	
	214	2	

TABLE 2. NUMBER OF FACILITIES SURVEYED BY MONTH BY PSU (Cont.)

Date	PSU Site Number	No. Facilities Surveyed/PSU	Facility Total/Month
	310	35	
	340	3	
	401	20	
	404	5	
	405	20	
	511	10	
	542	29	
	612	25	
	615	1	
	620	1	
	622	1	
	625	9	
	999*	5	
September, 1982	310	28	220
	110	11	
	130	38	
	201	1	
	320	28	
	401	16	
	405	8	
	413	33	
	511	36	
	542	10	
	625	1	
	999*	10	
October, 1982	310	36	208
	130	44	
	202	9	
	320	19	
	413	1	
	416	31	
	614	25	
	621	24	
	625	2	
	999*	15	
November, 1982	310	4	181
	120	1	
	130	2	
	201	15	
	205	15	
	208	32	
	209	2	
	214	3	
	392	24	
	402	3	
	403	12	

TABLE 2. NUMBER OF FACILITIES SURVEYED BY MONTH BY PSU (Cont.)

Date	PSU Site Number	No. Facilities Surveyed/PSU	Facility Total/Month
	406	3	
	410	38	
	416	1	
	618	7	
	621	1	
	625	5	
	999*	13	
December, 1982	204	5	162
	206	29	
	208	9	
	209	3	
	212	5	
	214	13	
	310	1	
	392	5	
	402	25	
	406	13	
	408	16	
	602	1	
	618	1	
	625	1	
	628	4	
	630	13	
	999*	18	
January, 1983	206	2	237
	208	1	
	213	40	
	310	1	
	403	19	
	408	23	
	414	19	
	511	1	
	520	49	
	552	8	
	602	13	
	607	10	
	608	3	
	611	10	
	630	15	
	631	1	
	752	5	
	807	3	
	999*	14	
February, 1983	381	1	197
	210	24	
	213	4	

TABLE 2. NUMBER OF FACILITIES SURVEYED BY MONTH BY PSU (Cont.)

Date	PSU Site Number	No. Facilities Surveyed/PSU	Facility Total/Month
	350	11	
	418	32	
	520	1	
	530	45	
	601	14	
	603	5	
	604	2	
	610	1	
	611	3	
	619	4	
	631	2	
	710	1	
	720	27	
	731	1	
	805	1	
	809	5	
	999*	13	
March, 1983	160	26	160
	210	16	
	320	1	
	350	33	
	404	2	
	409	1	
	415	1	
	603	2	
	604	1	
	606	14	
	626	29	
	720	1	
	742	1	
	806	9	
	809	5	
	999*	18	
April, 1983	160	1	51
	206	1	
	320	2	
	350	1	
	404	2	
	408	1	
	409	2	
	414	1	
	418	1	
	511	1	
	542	1	
	614	2	
	619	9	
	621	1	

TABLE 2. NUMBER OF FACILITIES SURVEYED BY MONTH BY PSU (Cont.)

Date	PSU Site Number	No. Facilities Surveyed/PSU	Facility Total/Month
	622	11	
	631	4	
	999*	10	
May, 1983	110	3	48
	120	2	
	212	1	
	214	2	
	340	5	
	417	1	
	418	5	
	530	7	
	605	4	
	614	1	
	626	1	
	710	1	
	720	1	
	761	1	
	999*	13	
June, 1983	371	2	18
	403	3	
	520	1	
	530	1	
	603	1	
	611	2	
	617	3	
	626	3	
	999*	2	
July, 1983	320	1	7
	409	1	
	416	1	
	418	1	
	552	1	
	625	1	
	626	1	
August, 1983	320	1	3
	413	1	
	618	1	

* PSU 999 was the designation given to large facilities (2,500 or more employees) which were sampled without regard to geographic location. If these facilities were not located within a sampled PSU, they were assigned to the survey team when they visited a PSU within a reasonable travel distance.

TABLE 3. NOES SAMPLE PSU'S MAJOR CITY, STATE(S), COUNTIES

PSU Number	Major City	State(s)	Counties
110		New Jersey	Bergen
	New York	New York	Bronx, Kings, New York, Putnam, Queens, Richmond, Rockland, Westchester
120	Burlington	New Jersey	Burlington, Camden, Gloucester
	Philadelphia	Pennsylvania	Bucks, Chester, Delaware, Montgomery, Philadelphia
130	Boston	Massachusetts	Barnstable, Dukes, Essex, Middlesex, Nantucket, Norfolk, Plymouth, Suffolk
		New Hampshire	Rockingham
142	Freeport	New York	Nassau, Suffolk
150	Newark	New Jersey	Essex, Hunterdon, Morris, Somerset, Union
160	Pittsburgh	Pennsylvania	Allegheny, Beaver, Washington, Westmoreland
201	Albany	New York	Albany, Greene, Montgomery, Rennselaer, Saratoga, Schenectady
202	Providence	Rhode Island	Bristol, Kent, Newport, Providence, Washington
203	Buffalo	New York	Erie, Niagara
204	New London	Connecticut	New London, Windham
205	Augusta	Maine	Hancock, Nennebec, Knox, Lincoln, Waldo, Washington
206	Harrisburg	Pennsylvania	Blair
207	Jamestown	New York	Cattaraugus, Chautauqua
208	Lancaster	Pennsylvania	Lancaster
209	Bridgeport	Connecticut	Fairfield
	Lancaster	New York	Lancaster
210	Scranton	Pennsylvania	Lackawanna, Luzerne, Monroe, Wyoming

TABLE 3. NOES SAMPLE PSU'S MAJOR CITY, STATE(S), COUNTIES (Cont.)

PSU Number	Major City	State(s)	Counties
211	Sussex	New Jersey	Passaic, Sussex
212	Trenton	New Jersey	Mercer
213	Berwick	Pennsylvania	Columbia, Montour, Schuylkill, Sullivan
214	E. Brunswick	New Jersey	Middlesex
310	Chicago	Illinois	Cook, Dupage, Kane, Lake, McHenry, Will
320	Detroit	Michigan	Lapeer, Livingston, Macomb, Oakland, St. Clair, Wayne
330		Illinois	Clinton, Madison, Monroe, St. Clair
	St. Louis	Missouri	Franklin, Jefferson, St. Charles, St. Louis
340	St. Paul	Minnesota	Anoka, Carver, Chicago, Dakota, Hennepin, Isanti, Ramsey, Scott, Washington, Wright
		Wisconsin	St. Croix
350	Cleveland	Ohio	Cuyahoga, Geauga, Lake, Medina
371	Milwaukee	Wisconsin	Milwaukee, Ozaukee, Washington, Waukesha
381	Cincinnati	Ohio	Brown, Clermont, Hamilton, Warren
		Indiana	Dearborn
		Kentucky	Boone, Campbell, Kenton
392	Kansas City	Kansas	Johnson, Wyandotte
		Missouri	Cass, Clay, Jackson, Platte, Ray
401	Flint	Michigan	Genesse, Shiawassee
402	Indianapolis	Indiana	Boone, Hamilton, Hancock, Hendricks, Johnson, Marion, Morgan, Shelby

TABLE 3. NOES SAMPLE PSU'S MAJOR CITY, STATE(S), COUNTIES (Cont.)

PSU Number	Major City	State(s)	Counties
403	Omaha	Nebraska Iowa	Douglas, Sarpy Pottawattamie
404	St. Cloud	Minnesota	Benton, Sherburne, Stearns
405	Green Bay	Wisconsin	Brown
406	Kansas City	Kansas	Lawrence, Douglas, Franklin, Leavenworth, Miami
	Kansas City	Missouri	
407	Cambridge	Ohio	Guernsey, Harrison, Tuscarawas
408	Colubmus	Ohio	Delaware, Fairfield, Franklin, Madison, Pickaway
409	Toledo Monroe	Ohio Michigan	Fulton, Lucas, Ottawa, Wood Monroe
410	Ft. Wayne	Indiana	Adams, Allen, DeKalb, Wells, Whitley
411	Columbia	Missouri	Audrain, Boone, Callaway, Howard, Randolph
412	Topeka	Kansas	Allen, Anderson, Bourbon, Coffey, Linn, Woodson
		Missouri	St. Clair, Vernon
413	Racine	Wisconsin	Racine
414	Marion	Ohio	Knox, Marion, Morrow
415	Hillsdale	Michigan	Hillsdale, Lenawee
416	Angola Defiance	Indiana Ohio	Lagrange, Steuben Defiance, Henry, Paulding, Williams
417	Evansville	Indiana	Dubois, Knox, Pike, Spencer
418	Akron	Ohio	Cuyahoga Falls, Kent, Portage, Summit

TABLE 3. NOES SAMPLE PSU'S MAJOR CITY, STATE(S), COUNTIES (Cont.)

PSU Number	Major City	State(s)	Counties
511	Arlington	Virginia	Arlington, Fairfax, Loudoun, Prince William, Cities of: Alexandria, Fairfax, Falls Church, Manassas, Manassas Park
	Rockville	Maryland	Calvert, Charles, Frederick, Montgomery, Prince Georges
	Washington	DC	
520	Dallas	Texas	Collin, Dallas, Denton, Ellis, Hood, Johnson, Kaufman, Parker, Rockwall, Tarrant, Wise
530	Houston	Texas	Brazoria, Chambers, Fort Bend, Harris, Libert, Montgomery, Waller
542	Baltimore	Maryland	Anne Arundel, Baltimore, Carroll, Harford, Howard, City of Baltimore
552	Atlanta	Georgia	Butts, Cherokee, Clayton, Cobb, DeKalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Newton, Paulding, Rockdale, Spaulding, Walton
561	Miami	Florida	Dade, Monroe
601	Corpus Christi	Texas	Bee, Brooks, Dimmit, Duval, Frio, Goliad, Jim Hogg, Jim Wells, Karnes, Kenedy, Kinney, Kleberg, LaSalle, Live Oak, Maverick, McMullen, Starr, Uvalde, Willacy, Zapata, Zavala
602	Ft. Lauderdale	Florida	Broward
603	New Orleans	Louisiana	Jefferson, Orleans, Plaquemines, St. Bernard, St. Charles, St. Tammany

TABLE 3. NOES SAMPLE PSU'S MAJOR CITY, STATE(S), COUNTIES (Cont.)

PSU Number	Major City	State(s)	Counties
604	San Antonio	Texas	Atascosa, Bandera, Blanco, Bosque, Burnet, Caldwell, Comanche, Erath, Gonzales, Hamilton, Kerr, Medina, Mills, San Saba, Somervell, Wilson
605	Bay City	Texas	Austin, Bastrop, Colorado, Fayette, Jackson, Lavaca, Lee, Matagorda, Wharton
606	Jackson	Mississippi	Hinds, Madison, Rankin
607	Wichita Falls	Texas	Clay, Montague, Wichita
608	Tampa	Florida	Hillsborough, Pasco, Pinellas
609	Memphis	Tennessee Arkansas Mississippi	Shelby, Tipton Crittenden DeSota
610	Tulsa	Oklahoma	Creek, Mayes, Osage, Rogers, Tulsa, Wagoner
611	Montgomery	Alabama	Autauga, Elmore, Montgomery
612	Columbia	South Carolina	Lexington, Richland
613	Little Rock	Arkansas	Pulaski, Saline
614	Wilmington	Delaware Maryland New Jersey	New Castle Cecil Salem
615	Petersburg	Virginia	Dinwiddie, Prince George, Cities of Colonial Heights, Hopewell, Petersburg
616	Jackson	Alabama	Choctaw, Clarke, Conecuh, Monroe, Washington
617	Georgetown	South Carolina	Clarendon, Georgetown, Williamsburg

TABLE 3. NOES SAMPLE PSU'S MAJOR CITY, STATE(S), COUNTIES (Cont.)

PSU Number	Major City	State(s)	Counties
618	Wilson	North Carolina	Johnson, Wilson
619	Ashland	Kentucky	Bath, Elliot, Fleming, Johnson, Laurence, Lewis, Magoffin, Martin, Mason, Menifee, Montgomery, Morgan, Nicholas, Robertson, Rowan, Wolfe
620	Greenville	South Carolina	Greenville, Pickens, Spartanburg
621	Salisbury	Maryland	Somerset, Wicomico, Worcester
622	Greensboro	North Carolina	Davidson, Davie, Forsyth, Guilford, Randolph, Stokes, Yadkin
623	Chattanooga	Tennessee Georgia	Hamilton, Marion, Sequatchie Catoosa, Dade, Walker
624	Gadsden	Alabama	Calhoun, Etowah
625	Rocky Mount	Virginia	Bedford, Franklin, Rockbridge, Cities of Bedford, Buena Vista, Lexington
626	Parkersburg	West Virginia Ohio	Wirt, Wood Washington
627	Durham	North Carolina	Caswell, Granville, Person, Rockingham
628	Columbus	Mississippi	Clay, Lowndes, Webster
629	Chatsworth	Georgia	Dawson, Fannin, Gilmer, Habersham, Lumpkin, Murray, Pickens, Rabun, Towns, Union
630	Cookeville	Tennessee	DeKalb, Putnam, White

TABLE 3. NOES SAMPLE PSU'S MAJOR CITY, STATE(S), COUNTIES (Cont.)

PSU Number	Major City	State(s)	Counties
631	Frankfort	Kentucky	Anderson, Bracken, Carroll, Franklin, Gallatin, Grant, Harrison, Henry, Owen, Pendleton, Shelby, Spencer, Trimble
710	Los Angeles	California	Los Angeles
720	San Francisco	California	Almeda, Contra Costa, Marin, San Francisco, San Mateo
731	Anaheim	California	Orange
742	San Diego	California	San Diego
752	Denver	Colorado	Adams, Arapahoe, Boulder, Denver, Douglas, Gilpin, Jefferson
761	Seattle	Washington	King, Snohomish
801	Sacramento	California	Placer, Sacramento, Yolo
802	Bakersfield	California	Kern
803	Fairbanks	Alaska	Divisions of: Upper Yukon, Fairbanks, South East Fairbanks
804	Las Vegas	Nevada	Clark
805	San Bernardino	California	Riverside, San Bernardino
806	Fresno	California	Fresno
807	Portland	Oregon	Clackamas, Multnomah, Washington, Yamhill
		Washington	Clark
808	Colorado Springs	Colorado	El Paso, Pueblo, Teller
809	San Jose	California	Santa Clara

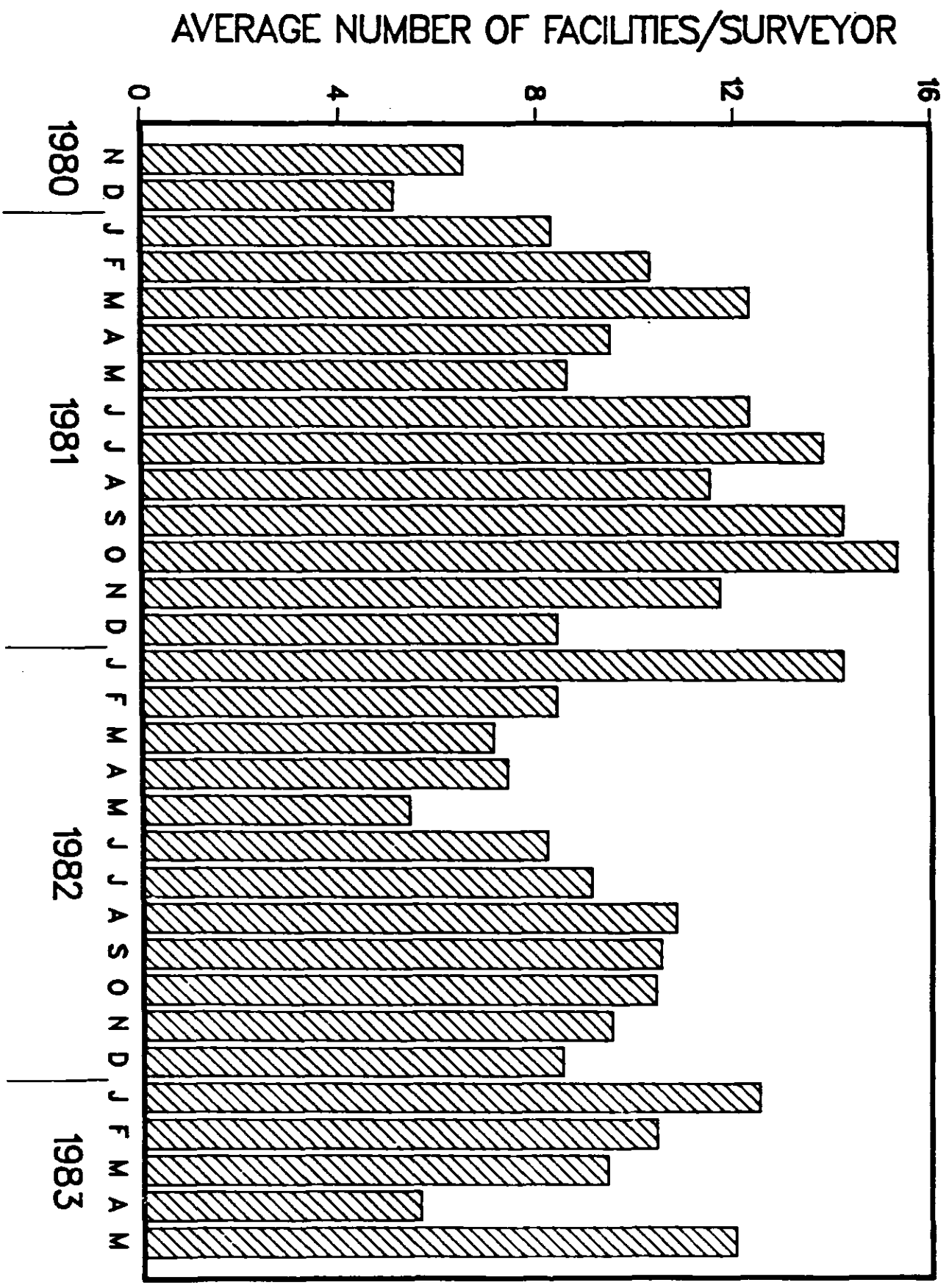


TABLE 4

AVERAGE NUMBER OF FACILITIES SURVEYED PER SURVEYOR

TABLE 5

TOTAL FACILITIES SURVEYED PER MONTH

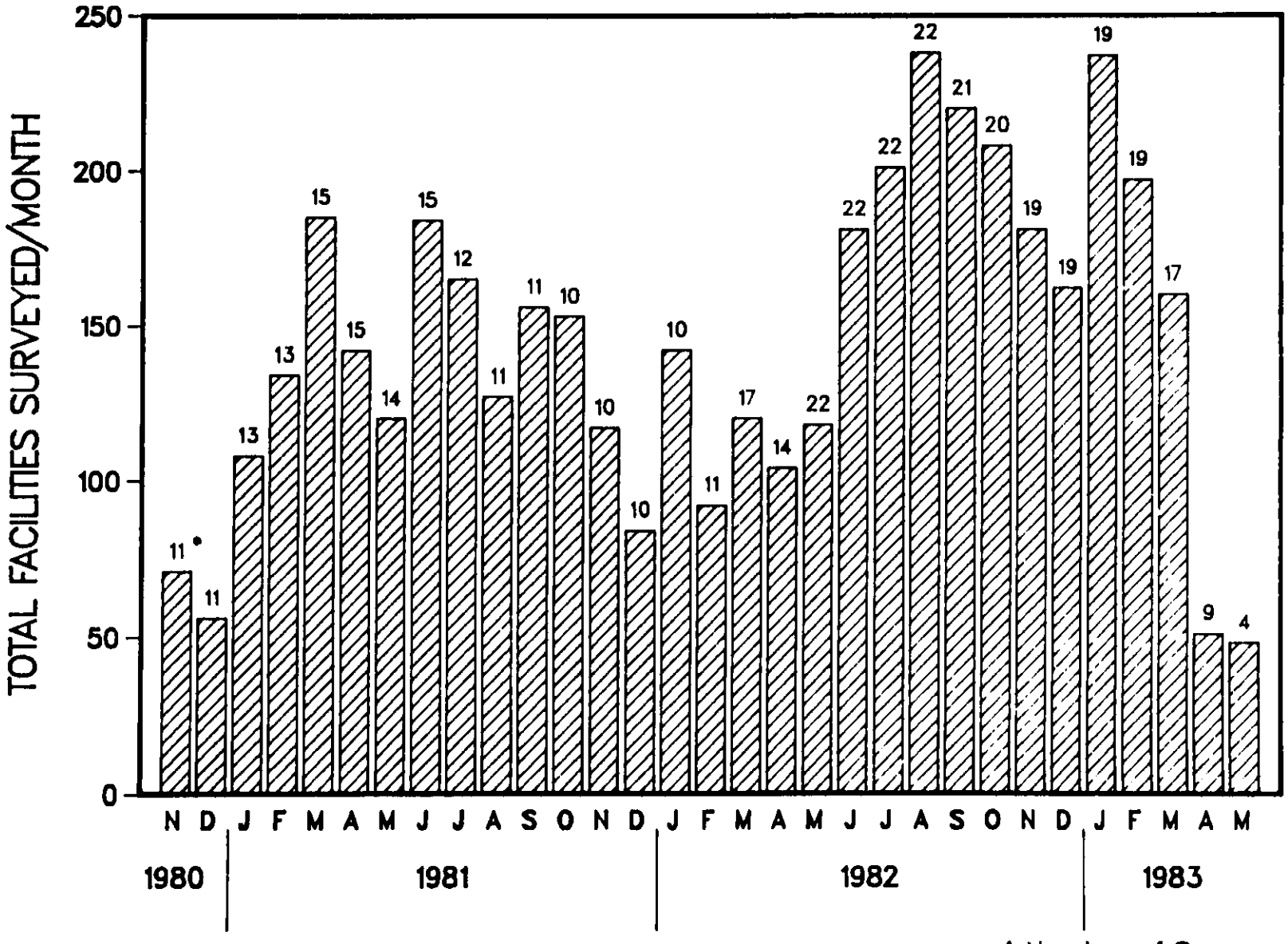


TABLE 6. AVERAGE TIME TO COMPLETE VARIOUS SURVEY TASKS BY FACILITY SIZE

Facility Size Range	Total Facilities Surveyed	Avg. Time to Conduct Survey (min.)	Avg. Time to Code Forms (min.)	Avg. Travel To and From Facility (min.)	Avg. Time Spent Waiting and discussing
8-19	924	69	60	89	13
20-49	956	83	83	91	14
50-99	732	107	117	94	15
100-249	787	144	171	96	18
250-499	425	208	250	99	19
500-999	251	329	397	117	19
1000-2499	238	501	639	136	27
2500-4999	117	790	881	193	27
5000-over	60	1395	1665	342	39
	4490				

V. SURVEYOR TRAINING

The process of recruiting personnel for the NOES and developing an appropriate training program began with an in-house examination of the personnel requirements and training program utilized in the 1972-1974 NOHS.

Examination of the first NOHS publication (Volume I), survey correspondence, and interviews with persons involved in the NOHS effort revealed several factors that warranted consideration in the recruitment and training of NOES field personnel:

1. All the NOHS surveyors were bachelor degree engineers with little or no industrial or occupational health experience.

2. The training program for the NOHS surveyors was a nine-week course of instruction in industrial hygiene which included coursework in safety, toxicology, and sampling. The training was provided by a university under a contract issued by NIOSH.

3. That portion of the NOHS training program devoted specifically to survey procedures, data encoding protocol, and interview techniques amounted to three days of formal instruction followed by on-the-job training during the field phase of the training regimen.

4. The first portion of field training for the NOHS lasted four weeks, and consisted of individual surveyors accompanying state regulatory personnel on their inspections, while completing NOHS forms. This was followed by a two-week tour of duty in a single city where survey results were compared, and differences in observations and interpretations were resolved among the surveyor group by general consensus with input from survey Headquarters.

5. Following the field training phase, NOHS surveyors were assigned in pairs to each of the Federal regions, and operated under regional control for the duration of the survey.

In considering these points, the NOES staff made several basic decisions:

1. The NOES, like the NOHS before it, would require field personnel with an adequate background in chemistry, physics, and mathematics. It was decided that persons with a Bachelor of Science degree would fulfill these requirements, and that to limit recruiting to engineers was unnecessarily restrictive.

2. While industrial hygiene training for the surveyors was necessary to provide a general understanding of occupational health, it was not necessary, given the observational techniques employed in the survey, to attempt to create fully qualified industrial hygienists for field work. Additionally, it was felt that the training program should be specifically tailored to the needs of the

survey, and should include extensive instruction designed to acquaint surveyors with actual industrial settings to improve surveyor recognition of potential exposure agents during the survey.

3. Quality control of incoming survey data was essential. Therefore, the coding protocol for survey observations should be very specific and the guidelines for survey activities should be rigidly controlled. This necessitated extensive training in survey interpretations, interview techniques, and coding formats.

4. The field training of NOES surveyors should be accomplished on an individual basis by industrial hygienists trained in the NOES procedures and/or by experienced NOES surveyors with emphasis on uniformity in identifying and recording observations of potential exposures to chemical, physical, or biological agents.

5. The NOES surveyors should operate in teams of from 3-10 people depending on survey needs with each team under the direct control of a designated team leader who would report to survey Headquarters. This organizational structure was felt to result in better control of survey activity, and to facilitate communications between the field and survey Headquarters.

On the basis of these decisions, the classroom and field training of the NOES surveyors was implemented as detailed in the following text.

The NOES surveyor training program was divided into five major sections with a total duration of nine calendar weeks. The major sections were as follows:

1. Industrial Hygiene

2. Industrial Processes

3. Recognition of Chemical, Physical, and Biological Agents

4. Interviewing and Data Encoding Procedures

5. Field Training

Training manuals composed of lecture notes and supplementary reference material for Sections 1 through 4 were developed for the training programs. Sections 1 through 3 lectures were videotaped to facilitate the training of successive surveyor groups.

Section 4 was taught in an interactive lecture mode, and the field training (Section 5) was conducted and supervised by experienced survey team leaders.

A. <u>The Industrial Hygiene Section</u>

The Industrial Hygiene Section of the NOES surveyor training program consisted of 24 hours of classroom instruction presented

in 19 separate lectures ranging from 30 minutes to 5 hours in length. Required reading from pre-printed reference material and lecture notes was estimated to take an average of 6 hours.

This training section was designed to provide the NOES surveyors with background knowledge on occupational health, and a familiarity with the various professional disciplines and working procedures utilized by the industrial hygiene community. Finally, the surveyors were provided with detailed instruction on the legal basis of the survey effort, including general enabling legislation and specific regulations governing the conduct of NIOSH field researchers. The list of lecture topics presented during this portion of the training program is as follows:

1. Role of the Industrial Hygienist
2. Industrial Toxicology
3. Hazardous Gases and Vapors
4. Absorption of Toxic Compounds
5. Hazardous Particulates
6. Industrial Ventilation
7. Noise and Vibration
8. Noise and Vibration Control
9. Industrial Radiation and Control
10. General Mechanical and Electrical Hazards
11. Fire Protection
12. Construction Site
13. Environmental Sampling Methods
14. Use of the Walk-Through Survey Technique
15. Private Industry Walk-Through Survey Procedures
16. General NIOSH Use of the Walk-Through Survey
17. Survey Procedure
18. NOES Walk-Through Survey Procedure (Introduction)
19. Legal Basis of the NOES Survey

B. <u>The Industrial Processes Section</u>

The Industrial Processes section of the NOES surveyor training consisted of 21 hours of classroom instruction presented in 15 separate lectures ranging from 1/2 to 4 hours in length. Required reading of reference material, lecture notes and text books was estimated to take an average of 8 hours.

This section provided the NOES surveyors with a detailed description of the manufacturing processes associated with selected industry categories, and the chemical agents used in each as an aid to their identification during the survey. Since chemical nomenclature plays a critical part in both this instruction segment and in the survey itself, this segment began with an intensive review of chemical nomenclature. The list of lecture topics presented during this section of the training program is as follows:

1. Chemical Nomenclature Review
2. Materials Transport and Storage
3. Heat Generators - Boilers, Incinerators

4. Solid Size Reduction and Enlargement
5. Gas-Solid Reduction
6. Pulp and Paper Production
7. Iron and Steel Production
8. Welding and Cutting Operations
9. Iron Ore Conversion
10. Aluminum Production
11. Automotive Production
12. Selected Petrochemical Processes
13. Glass Production
14. Utility Industry
15. Asphalt Batching

C. Recognition of Chemical, Physical, and Biological Agents

The third section of the NOES surveyor training consisted of 33 hours of classroom instruction presented in 20 separate lectures ranging from 1 to 3 hours in length. Pre-printed reference materials and lecture notes related to this section of the surveyor training required an estimated 3 hours of reading time.

This section provided a comprehensive overview of material usage and physical conditions in various industry types, as well as specialized lectures on control of occupational exposures. The list of lecture topics for this section is as follows:

1. Foundry Operations
2. Smelting Operations
3. Agrichemical Manufacture
4. Tire Manufacture
5. Welding
6. Industrial Radiation
7. Vapor Degreasing
8. Electroplating
9. Spray Painting
10. Insulation Material Production
11. Construction Safety
12. Cotton Processing
13. Confined Spaces
14. Refinery Operations
15. Chemical Production
16. Cement Production
17. Flammable and Explosive materials
18. Coke Production
19. Plastics Production
20. Industrial Use of Respirators

D. Survey Interview and Data Encoding Procedures

The final classroom section of the NOES surveyor training consisted of 15 days of lectures, group discussion, and survey-based practical exercises. In addition, examinations were given to assure the training staff that material from preceding Sections 1 through 3 had been learned.

This section provided formal training in the application of previous instruction to the conduct of survey interview, observation and data encoding procedures. At the completion of this section, students were prepared to assume field duties, subject to final on-the-job training and supervision by experienced industrial hygienists and/or designated team leaders.

Instruction was divided into three major segments, as discussed in the following text.

1. Part I - Survey Form Interview Procedures

   Training in the administration of the Part I Survey Form (Management Interview) involved approximately 22 hours of classroom lecture and group discussion, as well as 16 hours of student-conducted interviews and related discussion with the training staff.

   Part I Interview training was initiated with a three-hour lecture and discussion of the formal techniques of survey instrument (questionnaire) administration including such topics as probing techniques, interpretation of responses, handling of sensitive questions, personal deportment, and interview initiation (telephone and personal appearance). After this instruction, lecture and discussion on the expanded Part I Survey Form (including question, intent, inclusions, exclusions, and procedure) began. Thorough introduction and discussion of the Part I Survey Form with the candidate surveyors was allotted eight hours of classroom time. At the conclusion of this phase, the surveyors (as a group) conducted several simulated interviews with the instructor for an additional four hours to reinforce previous instruction. Each candidate surveyor was required to conduct eight full-scale management interviews with members of the NIOSH Hazard Section staff. The responses during the interview were based on pre-written scenarios to assure uniformity of management interview data across the surveyor class, and to enable the instructors to analyze the student's performance. Following each interview, the instructor and student analyzed and critiqued the interview.

   This simulated interview process required two full days of student and instructor time. At the conclusion of the interview sequence, a review and class critique was conducted and an examination administered. Any student problems in technique or interpretation were corrected at this time.

   The entire Part I training process required approximately five working days.

2. Part II - Survey Form Data Encoding Procedures

   At the conclusion of the Part I training, introductory lectures on Part II procedures were initiated with lectures and discussions of survey protocols, general guidelines,

interpretations, and industrial hygiene considerations. This lecture series required 8-10 hours of classroom time. Printed reference material was provided.

Formal presentation of the Part II data encoding protocols began with an overview of the coding format as discussed in Section VII of this publication. At appropriate points, specific lectures were given regarding special topics included as technical appendices (i.e., Intended Controls, Physical Exposures, Product Use Term (PUT) list, Chronic Trauma, Use of Mnemonics, Welding Protocol). Review of presented material including class discussion and/or questions were conducted twice during this five-day portion of the instruction. The final two hours of this week of instruction was devoted to a written examination covering all material presented during the Part II instruction period. The third and final week of this section of training began with a review and discussion of the last test administered. During the four hours devoted to this exercise, any errors in student understanding were discussed and corrected by the instructor.

The final phase of the Part II instruction was conducted utilizing the "case study" approach exemplified in Section VII. Nineteen simulated industrial situations in written form (derived from actual NIOSH studies) were presented to the surveyor class in increasing degrees of complexity. Each student was required to properly encode each case study to the satisfaction of the instructor, before progressing to the next.

As each study was completed, it was thoroughly discussed by the instructor, and student errors noted and corrected. Following completion of all written case studies, actual field conditions were simulated through oral presentation of industrial settings by the instructor. The students derived the data for encoding through questioning, as they would ultimately do in the field. Three such case studies were presented and encoded by the students to the satisfaction of the instructor, who reviewed and corrected all student coding efforts. Four working days were devoted to this "case study" portion of the training.

3. Part III - Survey Form Encoding Procedures

On the final day of classroom instruction, two hours were devoted to a discussion of the procedures for properly encoding the Part III Form, Surveyor Assessment.

The balance of the final day was devoted to class discussion, and review of any material presented during the first five weeks of training. At this time, the instructor made a final determination of the qualifications of the candidate surveyors based on examination results and class work. Any candidate unable to satisfactorily perform NOES survey procedures at this point was not permitted to proceed to the field phase of surveyor training.

E. Field Training of the NOES Surveyor

Field training of the candidate surveyor lasted approximately thirty days, and consisted of gradually increasing survey responsibilities under the direct supervision of the team leader to whom the candidate had been assigned. Prior to their arrival in the field, the classroom instructor discussed each candidate with his or her team leader, identifying any potential areas of weakness, and suggesting field training areas of emphasis as necessary.

The field training phase was divided into several segments, which were variable in length, depending upon the expertise of the individual surveyor, as determined by the team leader.

1. Assisted by experienced members of his team, the team leader reviewed and discussed survey procedures with the candidates through questioning and "role-playing" exercises based on current field experience. Particular emphasis was placed on survey initiation procedures (initial contact with a facility designated for survey) interview techniques, and identification of intended controls for chemical and physical exposures. This review/instruction process consumed 2-3 days, dependent upon the capability of the candidate surveyor.

2. Each candidate accompanied an experienced surveyor, assigned by the team leader, on three surveys. During this period, the candidate independently recorded his or her Part I, II and III observations. This parallel encoding was reviewed by both the experienced surveyor and the team leader, and errors or omissions discussed and corrected. Following these initial surveys, the candidate was expected to schedule and conduct the Part I management interview in three additional facilities, with an experienced surveyor in attendance to provide necessary assistance. Part II of the survey was conducted by the experienced surveyor, while the candidate independently recorded his/her observations. Thorough discussion of all survey observations were again conducted, and any areas of difficulty resolved. This process required 4 or 5 days, depending upon candidate ability.

3. If, in the judgement of the team leader, the candidate successfully completed Phase 2 of the field training through practical demonstration of knowledge, he/she assumed responsibility for the complete conduct of four additional facility surveys. Candidates were accompanied on these surveys by an experienced surveyor who provided assistance as necessary. The surveys became progressively more complex. Review and discussion of these surveys were again conducted by the team leader and other surveyors. In conjunction with these specific reviews, general discussions were held at the weekly team meetings to correct any remaining areas of difficulty. This segment of the field training required 7-10 days, dependent upon the candidate's ability, and survey complexity.

4. If, in the judgement of the team leader, the candidate adequately demonstrated a thorough knowledge of, and ability to perform surveys in accordance with established protocol, he/she was assigned to independently conduct surveys of increasing complexity. All encoded surveys were reviewed by the team leaders prior to submission to survey Headquarters.

VI. FACILITY SCHEDULING, SURVEYING, AND DECISION MATRIX FOR FIELD STAFF

The scheduling of selected facilities was a multi-phase process involving several contacts via telephone and written correspondence. Each establishment in the sample was contacted by telephone by the survey design contractor, through their telephone center in Rockville, Maryland, to verify (and correct, if necessary) facility-specific information derived from the computerized sample file, and to obtain some supplementary information useful to the conduct of the survey.

In general, the following information was verified (or corrected):

- Establishment name.
- Street address.
- Standard Industrial Classification (SIC).

Supplementary information obtained included:

- Information on any other worksites owned or managed by the same company and located in the same PSU.
- Name, title, and telephone number of a designated contact person in each establishment.
- Names of any unions at the establishment, and contact information for each local union organization identified.

The above information, for each sample facility in the PSU was transmitted to the NIOSH project officer approximately one month prior to the assignment of a PSU to the field staff.

The facility listings were distributed as follows:

- Three copies to the appropriate NIOSH Regional Office.
- Two copies to the field team.
- Three copies retained at NIOSH in Cincinnati, Ohio.

A notification letter (see Appendix A) was sent to the contact person in each facility and, if applicable, to the local union representative(s). The letter explained the intent of the survey, the sample selection procedure (in general terms), and the statutory authority to conduct research. In addition, the letter explained NIOSH's obligation to safeguard trade-secret information, and stated that a surveyor would be contacting them to schedule a walk-through investigation of their facility.

Shortly after receipt of their facility assignments for a PSU, the field surveyors telephoned the contact person(s) to verify information regarding the facility listing, to explain or answer questions about

the survey, and to schedule an appointment for the site visit. The following example criteria exemplify the decision process utilized during the survey.

Size:

If the company had less than eight employees currently on the payroll the facility was dropped from the survey. If there were more employees on the payroll than stated on the listing, the facility was surveyed and the correct number of employees was entered in the space provided in the Part I Survey Form.

Standard Industrial Classification (SIC):

If the SIC was determined to be different than stated on the listing and the corrected SIC caused the facility to be out-of-scope, the facility was dropped from the survey. If, however, the corrected SIC was in-scope, the facility was surveyed as planned and the programmer specialist was notified of the SIC change. Appendix B lists the SIC codes that are in-scope. Any SIC not on this list is out-of-scope.

Government, Duplicate Authority, Temporarily Closed, or Out of Business:

Federal, State, and Local government facilities, if mistakenly included on the listing, were dropped from the survey. Establishments (e.g., railroads and transit systems) covered under a preempting occupational safety and health statute were dropped from the sample. If the initial telephone contact indicated that an establishment was no longer in business, the surveyor visited the location to verify the status of that company. Facilities verified to be out of business were dropped from the survey. Facilities temporarily closed were rescheduled for a later date.

Address Changes:

One objective in the design of the survey was to consider sample facilities as single plants or locations. However, a company occasionally operated in more than one location, or was composed of several plants or branches and was listed only once on the sample universe file with a single address and/or employee total. Some of these branches, not listed on the sample universe file, were identified during the screening process. If other facilities in the PSU were owned, managed, or operated at other locations, the identity and size of these additional facilities were recorded. An alphabetic list derived from the universe file was then searched to determine if the new location should be treated as an addition to the sample frame.

Additional facilities reported to be managed by a sample establishment, and found on the universe listing were dropped because their presence on that listing meant they already had their proper chance of selection. Additional facilities not appearing on the list were given a chance of selection in the interview sample. This was accomplished by means of a worksheet designed to select additional facilities with probabilities reflecting their chance of selection had they been originally listed in the sample universe file.

A change of address resulting from actions by the U.S. Postal Service did not alter the validity of the sample establishment. The surveyor was instructed to verify that the facility in question was the establishment selected for the survey.

Any establishments that had moved to a location outside the boundaries of the PSU were dropped from the survey. If an establishment moved its operation to a new location within the PSU, the following rules applied:

1. The facility was surveyed if the new location was not already listed in the universe of eligible facilities.

2. The facility was dropped from the survey if the new location was listed in the universe of eligible facilities, but had not been selected.

3. If the new location was listed in the universe of eligible facilities and had already been selected, the facility at the new address was surveyed, and the facility listed at the old address was dropped.

Administrative offices, facilities with multiple addresses, and facilities having more than one building or with only one address listed were completed as follows:

1. Facilities which consisted only of administrative offices were dropped from the survey.

2. If a facility had multiple addresses, only the address or addresses selected and listed were surveyed.

3. A complex of buildings was considered a single facility. Therefore, all buildings associated with the address listed were surveyed.

Changes in Company Name:

If only the name of the company was changed, and all other selection criteria (address, size, SIC) remained the same, the facility was surveyed and the change noted on the appropriate form(s). If other particulars also changed, previously stated rules applied.

Refused Entry:

There were 125 cases of refused entry; 113 of which were satisfied through the shadow sample procedure[1] and 12 through a

---

[1] Each establishment selected for the survey had a reserve sample establishment selected with it to replace the attrition due to non-response. If all efforts by the telephone interviewer, surveyor, and the team leader did not succeed in obtaining cooperation, this reserve facility was used as a substitute for the non-cooperating facility. If the substitute was found to be out-of-scope, or refused to cooperate, the original sample facility was retained in-sample and a court order obtained to secure cooperation from the original facility.

court order (inspection warrant). A series of events occurred prior to implementation of an inspection warrant or shadow sample procedure.

If the surveyor encountered strong resistance during the telephone contact and could not set a mutually acceptable survey date, the surveyor documented the conversation and turned over all pertinent information to the team leader. The team leader then contacted the company representative to either schedule a survey date or be refused entry. If the team leader was successful in obtaining an appointment date, the information was returned to the surveyor for completion. If the team leader was refused entry, the alternate project officer was notified.

There were a number of cases where the surveyor had an appointment but upon arrival at the facility was refused entry. The surveyor explained in a polite but firm manner that he/she had authority under federal law to enter the facility and showed the company representative his/her NIOSH identification card relating to right of entry. If entry was still denied, the surveyor left the premises and contacted the alternate project officer.

Upon being notified of a refusal, the alternate project officer contacted the sample design contractor for a reserve facility. Information on the reserve facility was transmitted to the surveyor through the team leader. If the facility cooperated and voluntarily allowed the surveyor to conduct the survey, the reserve facility was used as a substitute for the original sample establishment. If, however, the reserve facility was non-cooperating, or out of scope, as determined by the sample design contractor's telephone interviewer or the field surveyor (or both), the original sample establishment was contacted and informed that an inspection warrant would be sought. Several facilities, after being informed that NIOSH would exercise its legal authority to gain entry, relented and allowed the surveyor to conduct the survey.

Completing surveys in the twelve facilities which required an inspection warrant consumed an inordinate amount of time and expense. In retrospect, it was fortunate that a court order was necessary in only 0.3% of the facilities sampled.

VII. FORMS PREPARATION INSTRUCTIONS

Introduction

The Forms Preparation Instructions describe the procedures to be used in filling out the National Occupational Exposure Survey (NOES) forms (Figures 1 through 3). These forms provide a means for quantifying and recording the results of the management interview, facility walk-through, and surveyor activity report. The Part I - Management Interview form structures the interview questions, and the Part II - Exposure Data form facilitates organization of the detailed potential exposure observations made during the walk-through portion of the survey.

The NOES forms have several parts:

The Preface (Figure 1A) identifies the establishment (plant, facility, etc.) surveyed. After confirmation of the geographical, industrial type, and employment size characteristics, the Preface is destroyed to assure confidentiality of facility-specific data.

The Part I form (Figure 1B) consists of 66 questions regarding management's policy relevant to employee safety and health.

The Part II form (Figure 2) is used to record the results of the walk-through survey of a facility. Information is recorded on the potential exposures observed, the occupational titles of the people exposed, the duration (full and part time) of the potential exposure, the intended control utilized in connection with the exposures, and whether or not these controls are functioning.

The Part III form (Figure 3) is used to record information about each individual survey, including an accounting of the surveyor time expended.

The instructions provided in the following sections appear in the order in which the survey forms are completed in the field. Section VII-A provides explanations and interpretations for each item in Part I, and illustrates the correct procedure for its use. Section VII-B provides general instructions and guidelines for completing Part II forms. Section VII-C provides examples of Part II coding of observed work-related exposures. Section VII-D illustrates the Part III form and provides guidance on its correct use.

The following general rules apply to the preparation of all survey forms.

Data Recording Conventions

Since the information recorded on the survey forms will be converted to an automated data processing medium, certain conventions should be followed in data recording.

Examples:

A. The coding fields should be filled with an appropriate code [number(s) or letter(s)]:

5 12 UV

B. The numbers and letters written in the coding spaces should be very clearly hand-printed. Easily confusable characters should be made especially distinct by being written in the following manner:

O (letter "O")	Ø (zero)
I (letter "i")	1 (one)
S (letter "s")	5 (five)
Z (letter "z")	2 (two)
U (letter "u")	V (letter "v")

C. Only one letter or number should be written in each space (which is delineated by short vertical lines):

ABCDEFGHIJKLM

D. Numerical quantities should be right-justified. Leading zeroes are not necessary for dates, line numbers, number of females, or total number of employees.

Examples:

DATE = [MM DD YY: 1Ø 8 82] LINE NUMBER = [9]

PAGE NUMBER = [Page Number 18–21: 32] NUMBER OF FEMALES = [Number of Females 73–75: 43]

TOTAL NUMBER OF EMPLOYEES = [Total 70–72: 78]

If the space provided is not sufficient to record the total numerical quantity, it will be necessary to repeat the observation (i.e. recordable exposure line, or occupational group title) related to the numerical quantity until the correct total number is recorded.

Example:

Total number of employees exposed to continuous noise above 85dBA full time with no control is 1,452 (all male).

05		F	NC	CONTINUOUS NOISE	999	Ø
10		F	NC	CONTINUOUS NOISE	453	Ø

E. Numerical coded values, as opposed to numerical quantities (i.e. an identification number for a manufacturer, distributor, or tradename in the Special Instructions columns) must be completely written out.

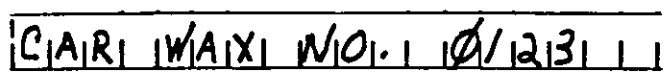
Example:

Manufacturer #1 = 

Under no circumstances can a zero be inferred.

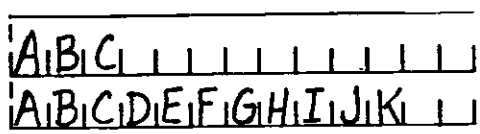
Example:

CAR WAX NO. 0123 must be written as:

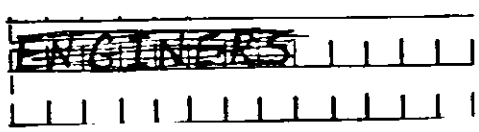


F. Alphabetical coded values should be left-justified, if the code does not require all the spaces in the coding field.

Examples:

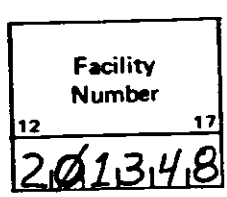


G. Any erasure necessary on a Part II form must be accomplished by a complete blackout. No single-line strikeouts or writeovers are permitted.

Example: 

H. Facility identification numbers are assigned to each sampled facility. All six digits must be entered in the proper location on all survey forms.

Example:



Examples of completed Part II survey forms, employing the conventions discussed here are contained in Section VII-B.

A. Part I Survey Form Preparation

The procedures to be followed in completing the Preface and Part I (Figures 1A and 1B) portions of the the NOES survey form are detailed in this section. The procedures for entering Preface information, and the instructions for the Part I form are organized in the following manner:

Question: Repeats the question and possible responses, as shown on the survey form.

Intent: The purpose of the question.

Definition: The explanation of the key terms or concepts involved in the question.

Inclusions: Explanations and/or examples of situations, conditions, events, etc. to be included as the possible response(s).

Exclusions: Explanations and/or examples of situations, conditions, events, etc. to be excluded as the possible response(s).

Procedure: Under this optional heading will be found detailed instructions that may be necessary to properly fill out portions of the Survey Form.

Note: If the Procedure is not given, the survey information is to be completed in accordance with one of these applicable alternatives:

1. Coded value assigned to the possible responses:

   Circle the code attached to the applicable response(s).

   Example: Part I, question #57

57. Do you have a regularly scheduled formal safety training program for your employees?$_{46}$

    (1) Yes

    2 No

Example: Part I, question #32

32. Do you have a program under which you regularly or periodically monitor the presence of physical agents such as heat, vibration, radiation, noise, and magnetic fields? 71

1 No (Skip to Question 34)

(2) Yes (Circle yes or no for each physical agent listed below:)

		Yes	No
1.	Heat 72	(1)	2
2.	Vibration 73	1	(2)
3.	Radiation 74	(1)	2
4.	Noise 75	(1)	2
5.	Magnetic fields 76	1	(2)
6.	Other 77	1	(2)

If the correct response is "other (specify)", then also print the additional information requested, as determined by management's response to the question.

Example: Part 1, question #48

48. Who provides personal protective devices? 39

1 individual employees

2 employer

3 both

(4) other (specify) THE EMPLOYEES' UNION

2. Numerical value:

Fill in the applicable number in the space provided. The number should be right-justified, and leading zeroes are not necessary.

Examples: Part I, question #11 and question #20

11. How many people are on your payroll for all shifts at the present time?

Males 32075 (36–40)

Females 1493 (41–44)

Total 33568 (45–49)

20. How many registered nurses and licensed practical nurses are on the payroll at this facility?

RN 12 (27–29)

LPN Ø (30–32)

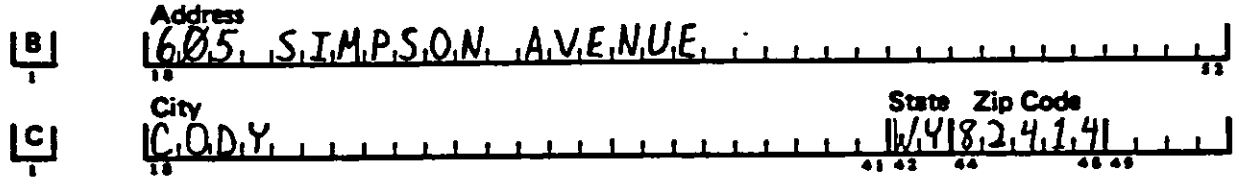
3. Uncoded information:

Print the names, identifying numbers, comments, and other miscellaneous information in the space provided.

Example: Part I, question #5

5. What is you major activity? MANUFACTURING

Examples: Preface, B and C

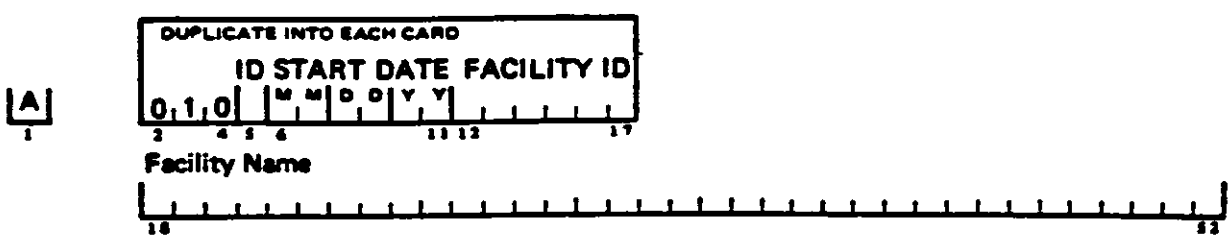


Compatibility With NOHS - An explanation of the compatibility of each question to the questions asked in the National Occupational Hazard Survey (NOHS). Statement examples include "fully compatible with question #6", "this is a new question", "clarification of question #24".

Preface Survey Form Instructions

The Preface serves as the cover sheet for the Part I form. Unlike the other parts of the NOES Survey Form, the information contained in the Preface will not be converted to an automated data processing medium. Rather, the information is used to document the contact made by a surveyor. Following verification of the name, geographical location, industry type (by 4-digit Standard Industrial Classification), and employment size group of the facility, the Preface data is destroyed to preserve confidentiality, and the facility-specific data is accessed only by an assigned NOES serial number (item A on the Preface, item 4 in the Part I and recorded appropriately on all Part II and III forms).

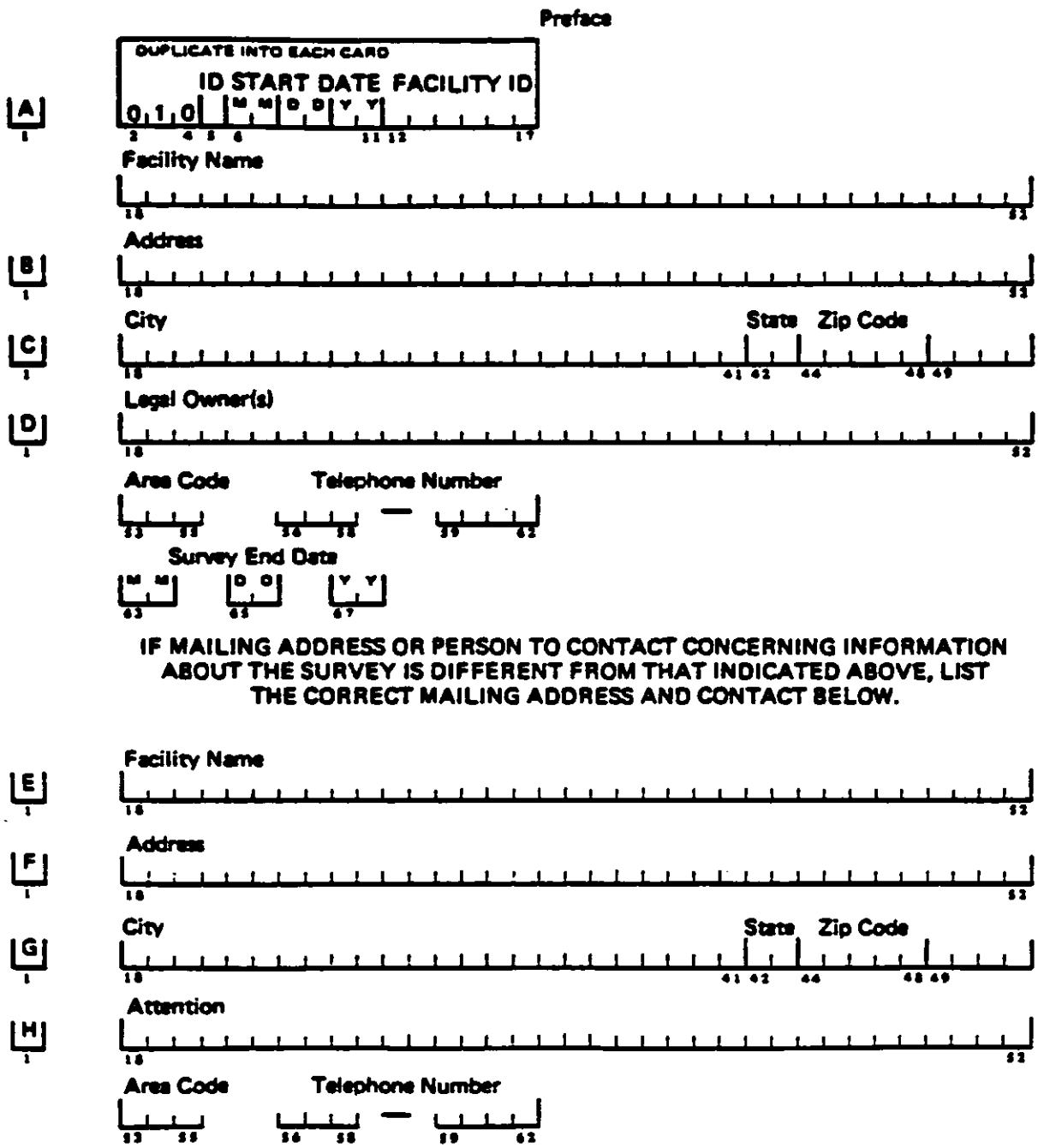
The instructions on the following pages are related to items A through H of the Preface. The information obtained is to be printed in the spaces provided in accordance with the general instructions.



Intent

To enter the date the survey began, the NOES 6-digit identification number, and the name of the facility being surveyed.

FIGURE 1A. Preface-Part I-Questionnaire



Definitions

The ID is a single alphabetical character identifying a specific NOES surveyor. The ID is assigned by NIOSH. The start date is the month, day, and year of the facility survey. If the survey takes several days, the first day is to be entered as the date. This sample date should be used on Parts I, II, and III where the date of the survey is to be recorded. The facility ID is the 6-digit unique NOES identification number assigned to the facility by NIOSH. The 6-digit number is used to assure that data from the survey of a specific facility can be tracked to the industrial type, employment size group, and geographical location characteristics of the facility once the Preface narrative information is destroyed. This data field always begins with a "2", to denote a NOES facility number, and the final five digits are sequential across the NOES survey sample universe. Programmed gaps of unassigned numbers allow for the inclusion of "shadow" or "subsample" numbers during the course of the survey. The facility name is the legally accepted name of the facility being surveyed and is supplied to the surveyor by NIOSH.

Inclusions

This data is to be entered for all surveys.

Exclusions

Do not enter the date of initial telephone contact with the facility unless that date is the same as the date the survey started.

Procedure

If, at the time of survey, the facility name supplied by NIOSH is different than the facility name as supplied by facility management, the management response should be entered in item A.

Compatibility With NOHS

Replaces and updates Question #1, #7, and #8 of the NOHS Preface.

Intent

To describe the geographical location of the facility being surveyed.

Definition

Address refers to the physical location of the facility based on the best available gerographic description.

Inclusions

Use the address supplied by NIOSH.

Exclusions

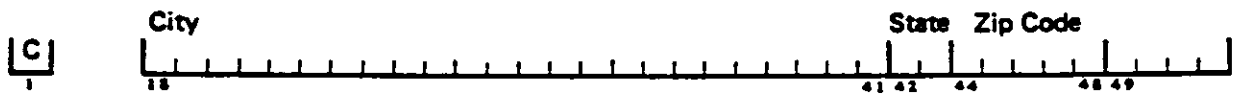
Do not use the post office box number or other address used primarily as a mail collection point. Do not use the corporate headquarters address unless the headquarters is located at the same site as the facility surveyed.

Procedure

If, at the time of initial telephone contact, the NIOSH-supplied address is incorrect, contact headquarters for a verification of the correct address. If authorized to proceed with the survey, enter the updated address as item [B] of the Preface.

Compatibility With NOHS

Replaces and updates Question #2 of the NOHS Preface.



Intent

To provide further geographic information on the facility being surveyed.

Definitions

City means the municipality, county, township or other specific incorporated or unincorporated area as defined by the state or federal possession. State refers to one of the 50 United States or the District of Columbia. Zip Code is the 5-digit code used by the U. S. Postal Service.

Inclusions

Enter the city and state names as provided by NIOSH.

Exclusions

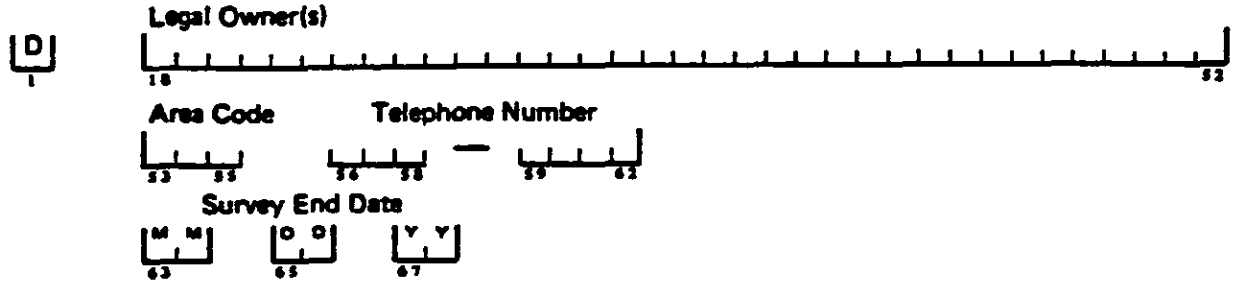
Do not record local descriptors as the city name unless it is commonly used. Evidence of common usage includes the use of the local descriptor by the telephone company, post office, etc. For example, Bethesda, Maryland is a local, unincorporated area of Montgomery County, Maryland which is recognized as an identifier by the telephone company, the post office and businesses.

Procedure

If, at the time of survey, the NIOSH-supplied city and state names and zip code are not accurate, follow the procedure outlined in [B], and if authorized, enter the updated information in [C].

Compatibility With NOHS

Fully compatible with Question #3 of the NOHS Preface.



Intent

To identify the person(s) or organization responsible for the business conducted in the facility, the telephone number (including area code) for the facility, and the date on which the survey was completed.

Definitions

The legal owner(s) is(are) the person(s) or entity who is legally responsible for the operation of the facility. The area code and telephone number are as provided to the surveyor by NIOSH. The survey end date is the date on which the actual on-site survey of the facility and/or its remote components is completed.

Inclusions

As stated above.

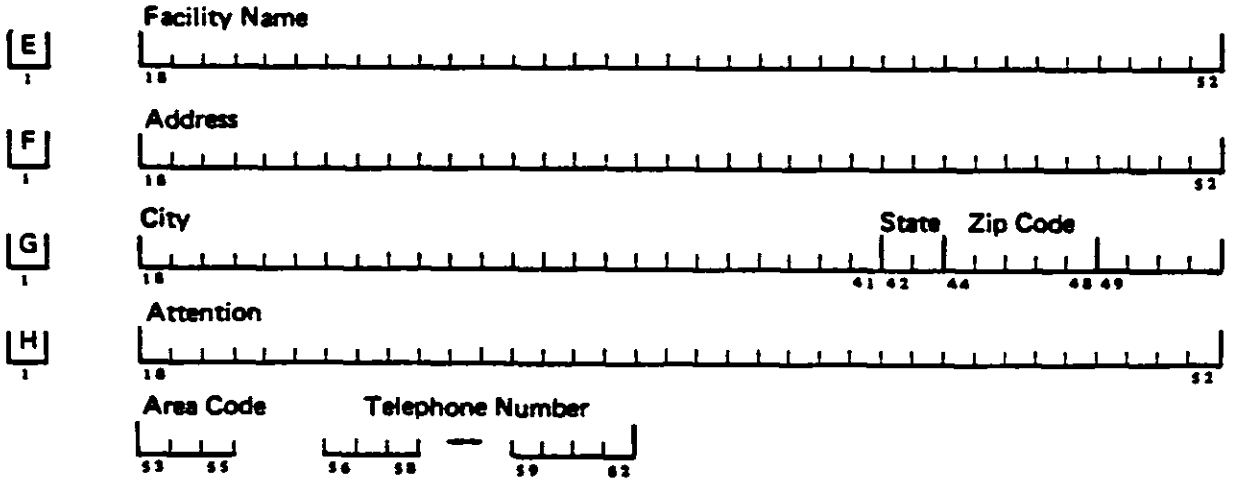
Exclusions

Do not enter the date on which encoding of the facility survey data was completed, unless it is the same as the date on which the on-site facility survey was completed.

Compatibility With NOHS

Fully compatible with, and replacing Question #4 and #6 of the NOHS Preface. Survey end date is a new question.

IF MAILING ADDRESS OR PERSON TO CONTACT CONCERNING INFORMATION ABOUT THE SURVEY IS DIFFERENT FROM THAT INDICATED ABOVE, LIST THE CORRECT MAILING ADDRESS AND CONTACT BELOW.



Intent

To identify the facility representative who was the contact person for the survey, in case it may be necessary to contact the facility for further information, or to supply the facility with information regarding the NOES survey.

Definitions

Facility name, address, city, state, zip code, area code, and telephone number are as previously defined, except that they refer to the contact person rather than the facility being surveyed. Attention provides space for the recording of the name of the person primarily responsible for providing answers to the Part I quesionnaire.

Inclusions

Utilize items E, F, G, and the area code and telephone number portions of H only if this information is different from that recorded in A through D. Always provide the date requested in H (Attention).

Compatibility With NOHS

Fully compatible with Question #9, #10, #11, #12, and #13 of the NOHS Preface, and an update of Question #5 of the NOHS Preface.

1. Part I - Survey Form Instructions

The pages of Part I contain 66 questions relating to General Facility Information, Medical Services, Industrial Hygiene and Safety Practices and General Recordkeeping Information. Figure 18 displays the Part I form.

The following instructions are keyed to question numbers on the Part I form.

Part I — Management Interview

1. **Card Code** [1] (1)

2. **Revision Code** 0 1 0 (2–4)

   Surveyor ID _ (5)

3. **Date Survey Started** _ _ / _ _ / _ _ (6–7 / 8–9 / 10) (mo/day/yr)

4. **Facility Number** _ _ _ _ _ _ (12–17)

Intent

To specifically identify the NOES surveyor, the date that the survey began, and the unique facility identifier.

Definitions

The card code is pre-printed in item number 1, and identifies the record format to be used in computer processing of the Part I questionnaire. The revision code is pre-printed in item number 2, and identifies the Part I questionnaire as a NOES form. The surveyor ID, date survey started, and facility number (Facility ID) are as previously defined.

Inclusions

This data is entered for all facilities surveyed.

Compatibility With NOHS

Fully compatible with NOHS, Part I Questions #1, #2, and #4.

Question:

5. What is you major activity? _____ 18

_____

Intent

To describe the general activity of the facility from the viewpoint of the management personnel being interviewed. This response also serves as a verification of the SIC code established for the facility in the sample screening process.

Definitions

SIC means Standard Industrial Classification and includes the codes contained in the Standard Industrial Classification Manual 1972 prepared by the Executive Office of the President - Office of Management and Budget.

Inclusions

Such general terms as construction, manufacturing, furniture manufacturing, chemical production, transportation equipment, transportation, wholesale trade, retail trade, etc. should be used.

Exclusions

Do not describe the specific product(s). This is done in Question #6.

Procedure

Print the response given by management in reply to this question.

Compatibility With NOHS

Fully compatible with Question #5.

Question:

CARD 2
1

6. What are your chief products, services, lines of trade, etc? _____
18

_____

Intent

To describe the product(s) or service(s) which is (are) produced or provided.

Definition

The products, services, or lines of trade refer to the major outputs of normal business operation.

Inclusion

Include all major product or service lines.

Procedure

Print major products or service lines in list form in the space provided (i.e. fiberglass batting and loose-fill insulation materials).

Compatibility With NOHS

This is compatible with the description portion of Question #56.

Question:

CARD 3
1

7. SIC codes (observed) ___ ___ ___
18 21

___ ___ ___
22 25

___ ___ ___
26 29

Intent

To classify the activity(ies) of the facility by the SIC codes derived from management response to Questions #5 and #6 and surveyor observation of the facility.

Definitions

SIC has been previously defined.

Inclusion

Include all (up to three) major product or service line SIC codes at the 4-digit level. A 4-digit SIC code describing the major activity will be provided for each facility by NIOSH. After the survey is complete, refer to the 1972 Standard Industrial Classifications Manual to determine if the brief description of the given SIC code corresponds with the observed major activity of the facility. If in agreement, the NIOSH-provided SIC code should be entered in the first of the lines provided. Where multiple SIC code-definable activities are observed, appropriate codes should be entered in the spaces provided, rank-ordered to correspond with surveyor observations, and management response to this question and Questions #5 and #6.

Ideally, the principal product or service and/or a rank-ordering of multiple activities should be determined by reference to "value added." In practice, however, it is rarely possible to obtain this information for individual products or services, and other criteria which approximate the same results must be used. It is recommended, therefore, that, when possible, the following characteristics be used for major economic sectors in determining an appropriate rank-ordering of SIC code-defined activity.

Economic Sector	Characteristics
Agriculture forestry, and fisheries	Value of production
Mining	Value of production
Contract construction	Value of work done
Manufacturing	Value of production
Transportation, communication, electric, gas, and sanitary services	Value of receipts
Wholesale and retail trade	Value of sales
Finance, insurance, and real estate	Value of receipts
Services	Value of receipts

Occasionally, in cases of mixed businesses, the above characteristics cannot be determined or estimated for each product or service, and less frequently a classification based upon the recommended characteristic will not adequately represent the process or activity of the establishment. In such cases the primary activity should be determined by the activity in which the greatest number of employees work.

The chief product or service of an organization may have changed from that which had been reported earlier or the reporting may have been incorrect. In cases where there is disagreement between the description of the product or service and the SIC code given, a new SIC code will be assigned by the surveyor in consultation with survey Headquarters.

Exclusions

A facility is out-of-scope of the survey and should not be visited if the major activity(ies) cannot be defined within the listed SIC codes in Appendix B. When the surveyor becomes aware of this possibility during the initial telephone contact, he/she should immediately consult with the team leader or survey Headquarters for further instructions.

Procedure

Enter the SIC codes in 4-digit form in the spaces provided and rank-order from greatest to smallest proportion of the facility business activity. In most cases, business activity can be adequately defined using one 4-digit code.

Compatibility With NOHS

Replaces the SIC code portion of Question #5b.

Question:

8. Approximately how many years has this facility been involved in this activity?

___ Years (If "unknown" code "UK")

Intent

To determine the length of time that this facility has been used for the same basic type of work.

Definitions

"Activity" is not restricted to that item specified as the major activity in response to Question #5, but refers to all activities at the facility.

Inclusions

In the situation where information is not available as to how long this activity has been carried out in this facility, use the earliest date indicated by the person who is being interviewed.

This is a multiple part question and should be answered by considering a series of decisions. First, a determination should be made as to the inception of the activity; then it should be determined from what date that activity has been carried out at the facility. If they are different, the latter is to be recorded. For example, if the New York Central Iron Works has been manufacturing seamless train wheels since 1911 but the facility itself was completed in 1947, the date to use is 1947. On the other hand, if the facility was built in 1900, and in 1949 the current production activity was initiated, the 1949 date should be recorded. In those instances where the individual buildings at the facility were constructed during different periods, the date recorded should be that date which represents the initiation of products or services at the facility where the major production work is taking place. For example, if an office building has been in continuous use from 1874, but a new plant was opened in 1955 and the production takes place in that plant, use the 1955 date since it best represents the production facility. Changes in legal ownership or name of the organization should be disregarded unless there is an associated change in product or service.

Procedures

Enter the response, in years, to the nearest year. When midway between two years, round off to the even year. For example, if the response is given as 3-1/2 years, enter the number "4."

Compatibility With NOHS

Fully compatible with Question #6.

Question:

9. How many shifts do you have at present? ___

Intent

To determine the number of employees engaged in production activities at different times in the facility. The purpose is to bring this fact to the surveyor's attention to ensure that all potential employee exposures are surveyed.

Definition

Shift is defined as the working period for the employees and may be more or less than eight hours in length per day.

Inclusions

Include the total number of shifts. For example, in continuous process industries, five shifts may exist to operate the facility.

Exclusions

Do not included shifts when no production employees are present. For example, if all production work is performed on the first shift and if the second and/or third shifts of a facility is composed entirely of maintenance or janitorial personnel, enter the number "1."

Procedure

For those facilities that have unusual shifts (e.g. four-day work week or three-day work week) enter the number of shifts, but explain irregularities in the comments in Part III. If shift schedules are so varied that the number of shifts cannot be easily determined, the total number of people on the payroll should be divided by the average number of people in the facility at any given time.

Compatibility With NOHS

Fully compatible with Question #9.

Question:

10. **How many hours per shift?**

__ __ **(If irregular, code "99").**
34 35

Intent

To determine the number of hours per shift in this facility at the time of the survey. There may be regional differences in shift lengths, or some facilities may be working four-day weeks. The purpose of this question is to bring the number of hours per shift to the surveyor's attention, since he must account for all employees (regardless of shift) on the Part II form.

Inclusions

Include all shifts in considering this question.

Procedure

For those facilities which have shifts of varying lengths, code "99."

Compatibility With NOHS

This is a new question.

Question:

11. How many people are on your payroll for all shifts at the present time?

Males ____

Females ____

Total ____

Intent

To determine the total number of employees working in the facility being surveyed, and to determine the number of males and females.

Definition

People, as used in this question, refers to the term "employees".

Inclusions

Include full-time and part-time personnel who are paid directly by the facility. Include maintenance and repair personnel and janitorial staff. Include individual consultants working directly for the facility. Include those personnel who may work solely on a commission basis.

In the special case of a survey in the construction industry involving a construction job site, the question above should be understood to read, "How many people in the direct employ (even if temporarily) of the firm being surveyed are on this job site today?" In this special case, only persons being paid directly by the surveyed facility are to be included. Include construction workers who are retained on a job-specific basis, such as carpenters hired through contact with their local union for the duration of a construction job. Include office personnel, if any, but exclude truck drivers who are merely making deliveries, and inspectors employed by governmental agencies.

Exclusions

Do not include contract or sub-contractor personnel employed by another enterprise, even if they are continually on site. For example, the maintenance or cleaning services provided by a contract organization or temporary secretaries hired from an agency on a short-term basis, or construction workers employed by a sub-contractor are excluded.

Compatibility With NOHS

Fully compatible with Question #7. Number of males and number of females has been added for two purposes:

(1) To validate the surveyor's Part II observations.

(2) To preserve the capability to develop estimates of the number of women potentially exposed to occupational health hazards, and the number of men potentially exposed. Many chemical and physical agents are suspected of having different effects on the two sexes.

Question:

12. Of this total number, how many are normally in the work areas as opposed to the administrative or other areas?

_____

Intent

To determine the number of employees in the facility working in those locations where production or service work is conducted.

Definition

Work area is defined as service area or areas where major activities are conducted.

Inclusions

Include personnel clerks, secretaries, maintenance people, etc. who are located in the production or service areas or areas where the major activity is being conducted. Examples are: Iron works - those people who work in the raw material storage, fabricating, and warehouse areas; transportation - those who maintain and repair equipment within the facility. Include a cab driver in a cab company and a truck driver in a trucking company. Include field service personnel in a service industry.

Exclusions

Do not include outside salesmen, erectors, administrative personnel and clerical personnel whose place of work is outside the production or service area. An example is: wholesale and retail -- those clerical, administrative, or sales personnel who are geographically separated form the area where the wholesale and/or retail trade occurs. Example: traveling salesmen. Exclude truckers in manufacturing.

Compatibility With NOHS

Fully compatible with Question #8.

Question:

13. **Are there any labor unions operating in this facility?** [86]

1 **No**

2 **Yes; list complete union names and acronyms (initials)**

CARD [4] [1]

Union Names	Acronym
_____	[18] ------ [24]
_____	[25] ------ [31]
_____	[32] ------ [38]
_____	[39] ------ [45]
_____	[46] ------ [52]
_____	[53] ------ [59]
_____	[60] ------ [66]

Intent

To determine the prevalence of unions in the facilities included in the survey population.

Definition

A union is any organization in which any of the facility's employees participate as members, which exists for the purpose of dealing with the employer concerning grievances, wages, working hours, and conditions. Unions are voluntary organizations and need no license from the government to operate.

Inclusions

Any organization which may be called a trade union, labor union, labor organization, etc., whose purpose is as defined above.

Exclusions

Organizations such as credit unions, fraternal associations, or social groups which may consist solely of the facility's employees, but whose purpose is not as stated in the above definition.

Compatibility With NOHS

Compatible with Question #40.

Question:

CARD 5

14. Is there a formally established health unit at this facility? 18

1 Yes, physician in charge

2 Yes, registered nurse in charge

3 Yes, licensed practical nurse in charge

4 Yes, other in charge

5 No

Intent

To determine if there is a company policy to provide basic health resources or capabilities at the facility site.

Definitions

Health unit suggests that a specific work area or portion of the facility has been reserved solely for the examination and/or treatment of employees and that there is a permanent staff (either full-time or part-time) responsible for operating this unit.

Physician refers to a person who possesses a state or federal government-recognized medical degree, such as an M.D. or D.O., and is licensed to diagnose and treat diseases and disorders of the human body or a particular disease, age, or occupation group.

Registered Nurse (RN) is a person meeting the educational, legal, and training requirements to practice as required by a state board of nursing.

Licensed Practical Nurse (LPN) is a person who meets the requirements of the state for such a designation, and is licensed by the state.

Inclusions

When more than one response applies, use the lowest applicable code number. For example, if a physician is in charge two days a week and a nurse is in charge the other days, code the response as "1".

Exclusions

Do not count, as a health unit, a resting room that is reserved for female employees as required under certain Federal and/or state regulations. Exclude the situation where a room is used to store first-aid supplies and no one is assigned the responsibility for providing health care to employees. Do not include situations where rooms are reserved for specific purposes other than basic health care (for example, a room used only for audiometric testing).

Procedures

If a "paramedic" is in charge, then "4" should be coded.

Compatibility With NOHS

Fully compatible with Question #15.

Question:

15. Do you have an employee at this facility with formal first-aid training, who has been formally designated to provide emergency medical treatment?

    1 Yes, full-time
    2 Yes, part-time
    3 No

Intent

To determine if a specific individual (or individuals) who is not a physician or nurse has been formally assigned the responsibility for providing emergency first-aid to the employees.

Definitions

Physician: See Question #14.

Nurse: See Question #14.

Full-time: At least one individual on duty at all times during which the facility is operating.

Part-time: At least one individual is designated, but such individuals are not on duty during all hours of operation of the facility.

Inclusions

Include paramedics and other employees (who are not physicians or nurses) who have been formally assigned this responsibility.

Exclusions

Exclude physicians and nurses. Exclude all informal arrangements.

Compatibility With NOHS

Fully compatible with Question #21.

Question:

16. Do you have on your payroll one or more on-site physicians to give your employees medical care? [20]

1 Yes, full-time
2 Yes, part-time
3 No

Intent

To determine if the facility employs a physician for the purpose of providing the employees with access to the care of a physician.

Definitions

Physician: See Question #14.

Full-time: Defined in Question #15.

Part-time: Defined in Question #15.

Exclusions

Exclude all physicians who are not engaged in the direct provision of medical services to the employees. Do not include any physicians whose primary responsibility is research. Exclude all physicians provided by a third-party provider under contract to the facility.

Compatibility with NOHS

Partially compatible with Question #16.

Question:

17. **Do you have a formal arrangement with any outside source (physicians or clinics) to give your employees access to the care of a physician?**

    1 **Yes, physician will travel to this facility on call**

    2 **Yes, at clinic (not at this facility)**

    3 **Yes, physician is based at this facility either full or part-time**

    4 **No**

Intent

To determine if formal arrangements for medical care are provided for facility employees and the type of arrangements used in the provision of such care.

Definition

Physician: See Question #14.

Inclusions

Include only those arrangements made by the facility's management. If more than one arrangement was made, use the arrangement with the lowest coding number. For example, if it is determined that a physician will travel to the facility on call and that formal arrangements exist with an outside clinic, the proper response is "1." A medical center should be considered a clinic.

Exclusions

Do not include medical service arrangements provided by unions, associations or other groups unless a formal arrangement exists with the facility's management. Exclude third-party payment plans, e.g., Blue Cross/Blue Shield insurers.

Procedure

If the facility has no direct formal arrangement with a physician (codes 1, 2, or 3), but does, as a policy, pay medical bills incurred by employees at a physician of the employee's choice, then code "2" (yes, at clinic) is the proper response.

Compatibility With NOHS

Partially compatible with Question #16.

Question:

18. Estimate the average number of physician hours that are devoted to your facility per week.

__ __ hours per week

Intent

To determine the aggregate level of physician effort provided to the facility.

Definition

Physician: See Question #14.

Inclusions

When Question #16 is answered by code 1 or 2, include an average weekly figure based upon the last 12 months or the best available estimate.

Include the physician hours, if available, spent with the employees when the response to Question #17 is either code 1, 2, or 3. If the response to Question #17 is code 2 due to a facility policy of paying the medical bills incurred by an employee with a physician of the employee's choice, the company is at least indirectly aware of physician hours devoted to the employees of the facility, and should be able to provide an estimate in response to this question.

Exclusions

Do not include time spent by physicians in the facility, other than time spent caring for the employees. For example, physicians involved in medical research would not be counted.

Compatibility With NOHS

Fully compatible with Question #17.

Question:

19. Does this facility have one or more nurses on the payroll to provide care for employees? 26

1 Yes
2 No (Skip to Question 21)

Intent

To determine if nursing services are available to employees on a regular basis through direct employment of a nurse or nurses.

Definitions

Nurse (RN and LPN): Defined in Question #14. Regular basis refers only to situations where a nurse is scheduled to be on duty at periodic intervals throughout the week.

Inclusions

Include registered and licensed practical nurses specifically assigned to provide nursing services to the facility's employees on a regular basis.

Exclusions

Do not include nurses on the facility's payroll whose job function does not involve taking care of the facility's employees. Example: Nurses working in a hospital or research capacity; or as medical secretaries or receptionists.

Do not include student nurses, or other paramedic personnel undergoing on-the-job training. Do not include visiting nurses from corporate headquarters even if "detailed" or "assigned" to this facility for long periods of time. Do not include visiting nurses from city, county, state, and other government agencies.

Compatibility With NOHS

Fully compatible with Question #18.

Question:

20. How many registered nurses and licensed practical nurses are on the payroll at this facility?

RN ___ [27-29]

LPN ___ [30-32]

Intent

To determine the number of nurses employed at this facility.

Definition

Nurses (RN and LPN): Defined in Question #14.

Inclusions

Include all categories specified in Question #19.

Include all nurses and supervisory nurses who are employed by the facility and are giving nursing aid to employees. This also includes nurses who may not be present at the facility.

Exclusions

Do not include nurses who may be employed by the facility but do not perform nursing services for employees.

Do not include visiting nurses from city, county, state, and other government agencies. Do not include visiting nurses from corporate headquarters even in those circumstances where the nurses have been "detailed" or "assigned" to this facility for long periods of time.

Do not include nurses supplied under contract with a third party provider, or through an arrangement not made by management.

Compatiblity With NOHS

Fully compatible with Question #19.

Question:

21. **Estimate the average number of nursing hours that are devoted to your facility per week.**

___ ___ **hours**

Intent

To determine the aggregate level of medical nursing effort provided to the facility.

Definition

Nurse: Defined in Question #14.

Inclusions

Include the hours spent by all categories of nurses. Include nurses who provide nursing services on a contract basis. Include nurses from corporate headquarters who are assigned to provide nursing services to this facility.

Include other nurses providing care to employees if the facility, as a policy, pays for such nursing service. This may occur regardless of the response to Question #19.

Exclusions

Do not include nursing hours that may be devoted to facility employees by nurses employed by a government agency.

Exclude nurses who do not spend time in the provision of medical care. Example: full-time nurse who is assigned to teach sanitation techniques to neighborhood improvement group.

Do not include visiting nurses from city, county, state, and other government agencies.

Compatibility With NOHS

Fully compatible with Question #20.

Question:

22. **Do you provide the following examinations or tests to all or to selected groups of employees on a periodic basis?**

	No	Yes, All	Yes, All Exec. & Mgmt Only	Yes, All Production Workers Only	Yes, for Selected Mgmt and/or Production Workers
Opthalmology [37]	1	2	3	4	5
Audiometric [38]	1	2	3	4	5
Blood tests [39]	1	2	3	4	5
Urine tests [40]	1	2	3	4	5
Pulmonary function [41]	1	2	3	4	5
Chest X-rays [42]	1	2	3	4	5
Allergy/Sensitization [43]	1	2	3	4	5
Immunizations (flu, etc.) [44]	1	2	3	4	5

Intent

To determine the number of facilities that have a preventive medical program for their employees, and the types of examinations or test provided.

Definitions

All: When an employer provides an examination to each employee of a designated type (every employee, executive and management, production workers) without regard to that employee's exposure to potential occupational safety and health hazards.

Selected: When an employer provides an examination to some, but not all of the employees.

NOTE that these definitions apply equally to the responses for Question #22 through #26.

Inclusions

As listed.

Procedure

Facilities employing truck drivers in interstate commerce and operating under Interstate Commerce Commission (Department of Transportation) regulations pay for, but may not be aware of the exact nature of the examination provided. Review of the pertinent examination form and Department of Transportation requirement indicated that these drivers minimally receive opthalmology, audiometric, urine, and pulmonary function tests or examinations. At the doctor's discretion, they may also receive blood tests and x-ray examinations. Therefore, Question #22 should be coded 2 or 5 (as applicable) for all the tests or examinations listed here for truck drivers subject to this Department of Transportation medical examination.

Compatiblity With NOHS

Question #22 replaces and supplements Question #25 through #32. The question remains fully compatible with NOHS.

Question:

23. **Before new employees are hired or placed, are they required to take a medical examination?** 1 2 3 4 5

Intent

To determine the number of facilities that examine the status of a new employee's health when hired or placed in a new position.

Definitions

Medical examination means those tests, procedures, and observations of an employee's health status that are performed by, or under the supervision of, a physician. Physician is defined in Question #14.

Inclusions

Include all types of examinations. Examinations could range from a basic interview session with a physician to a comprehensive physical examination involving X-rays, blood, urine, other laboratory tests, etc.

Include examinations performed by an employee's private physician when the results of the examination are submitted to the facility's management.

Sight screening tests, color blindness tests, and/or audio screening tests are to be included when the results are reviewed or evaluated by a physician.

Exclusions

Do not include health examinations which are not performed by or under the supervision of a physician.

Procedures

When the response refers to employees in certain occupations (e.g., maintenance personnel) and also managers, use the code "5".

Compatibility With NOHS

Fully compatible with Question #23.

Question:

24. **Do you record health information about a new employee on some regular form?** **1** **2** **3** **4** **5**

Intent

To determine if the facility records health information about new employees and to determine for which types of new employees such information is recorded.

Definitions

Health information refers to any data regarding an employee's health. Regular form is any type of standardized documentation that is retained as part of the employee's file or as part of his medical history.

Inclusions

Include all written records of information, including responses to questions pertaining to employees' health as long as the recording process is consistent for the designated employee group.

Information that is obtained from pre-employment physicals or detailed medical histories should be included.

Include any kind of information that is retained concerning employee's health. For example, a recorded question which asks: "How is your health?" and to which the reply is "good, fair, or poor" should be included.

Include instances where any information about physical defects of a new employee is recorded.

Exclusions

Do not include situations where medical information is obtained from employees, but is not retained in the files as a permanent record. Exclude information on physiological tests when obtained for other that health purposes.

Compatibility With NOHS

Fully compatible with Question #22.

Question:

25. **Do you require medical examinations of your employees who return to work after an illness?** 1 2 3 4 5

Intent

To determine if the facility requires medical examinations to assess the level of fitness of an employee returning after sick leave, and to determine for which type(s) of employees such examinations are required.

Definitions

Medical examination is defined in question #23.

Inclusions

Include situations where company policy may not cover all employees. For example, if the facility requires special medical examinations only for employees in certain occupations, or for only certain categories of absences, a positive response should be recorded.

Include those situation where the examination is not performed at the facility but the employee submits a written statement that his personal physician considers the employee fit to return to work.

Exclusions

Do not include situations where the returning employee may voluntarily visit the facility's medical unit or his own physician. Required is the key word.

Compatibility With NOHS

Clarification of Question #24.

Question:

26. **Do you require medical examinations of your employees when their employment is terminated? (Exit examination)** 1 2 3 4 5

Intent

To determine if the facility requires exit medical examinations, and to determine for which type(s) of employees such examinations are required.

Definition

Exit Examination: A medical examination that is performed by or under the supervision of a physician when the employee's employment is terminated.

Inclusions

Include all examinations, partial or complete, performed by or under the supervision of a physician.

Exclusions

Do not include situations where the terminating employee may voluntarily visit the facility's medical unit or his own physician. Require is the key word.

Compatibility With NOHS

Clarification with Question #24.

Question:

27. How long are medical records and other health information records retained?

__ __ Years (If "forever" code "999")
49 50 (If "unknown" code "UK")

Intent

To determine the facility's policy with respect to the retention of personnel health and medical records.

Exclusions

Exclude personnel record systems and timekeeping systems unless they make specific provision for the inclusion of medical and health-related records.

Compatibility With NOHS

New question.

Question:

28. **Do you employ full-time individuals at this facility whose major responsibilities are in the area of prevention of occupational injuries or illnesses?**$_{52}$

1. **Yes, injury prevention**
2. **Yes, illness prevention**
3. **Yes, both injuries and illnesses**
4. **No (Skip to Question 30).**

Intent

To determine if the facility employs individuals whose primary responsibilities are to prevent injuries and illnesses.

Definition

Injury Prevention: That art which is devoted to the recognition, evaluation, and control of occupational safety hazards. Injury prevention activities include, but are not limited to: Periodic inspection of the facility for fire hazards and adequacy of fire protection; the inspection of machinery for safety guards over moving parts, wheels, pulleys, etc.; planning and developing safety programs; conducting safety and first-aid classes for employees; and evaluating the facility for compliance with OSHA regulations.

Inclusions

Include in the "injury prevention" category, all personnel with job titles such as Safety Man, Safety Inspector, Safety Supervisor, Industrial Engineer, Safety Director, or Safety Professional or Safety Engineer if the individual is responsible for performing safety-related duties for more than 50% of the time.

Exclusions

Exclude all federal, state, and local government officials; they are not full-time employees of the facility. Exclude all visiting corporate headquarters personnel, even in those situations where such personnel have been "detailed" or "assigned" to work at the facility for long periods of time.

Definition

Illness Prevention: That art which is devoted to the recognition, evaluation, and control of occupational health hazards. Illness prevention activities include, but are not limited to: Recognition of environmental conditions and stresses associated with work and work operations, the evaluation of, on the basis of training and experience and with the aid of quantitative measurements, the magnitude of these stresses in terms of potential impairment of the employee's health and well-being; prescribing methods to control, eliminate, or reduce such stresses, collecting samples of dusts, gases, and other potentially toxic materials for analyses; evaluating the adequacy of ventilation in the work areas; and developing educational programs for employees.

Inclusions

Include in the "illness prevention" category, all persons with job titles such as Industrial Hygienist, Industrial Health Engineer, Environmental Health Engineer, Health Specialist, etc. if that person is responsible for performing health related duties more than 50% of the time.

Exclusions

Exclude all personnel involved in the direct delivery of medical care. Do not include doctors, nurses, or paramedics who spend less than 50% of their time in the illness prevention activities described above. Exclude all federal, state, and local government officials; they are not full-time employees of the facility. Exclude all visiting corporate headquarters personnel, even in those situations where such personnel have been "detailed" or "assigned" to work at the facility for long periods of time.

Procedure

The thrust of this question is to determine if such personnel are employed at the facility. If none are employed, circle "no" (code response "4") and skip to Question #30. If the answer is "yes," determine in which category ("safety" or "health") the company employs individuals. If unable to classify, or if the facility employs people in both categories, circle "yes, both injuries and illnesses," (code response "3") and proceed to Question #29.

Compatibility With NOHS

Consolidates responses from Questions #10, #11, and #13.

Question:

29. How many full-time occupational health and safety specialists are employed at this facility?

$\overline{53}\ \overline{54}$ Safety (injuries)

$\overline{55}\ \overline{56}$ Health (illnesses)

For each of those individuals, please write in the appropriate activity number from the activity clusters listed below:

Individual #1$_{57}$ —

Individual #2$_{58}$ —

Individual #3$_{59}$ —

Individual #4$_{60}$ —

Individual #5$_{61}$ —

Individual #6$_{62}$ —

Individual #7$_{63}$ —

Individual #8$_{64}$ —

Individual #9$_{65}$ —

Individual #10$_{66}$ —

Individual #11$_{67}$ —

Individual #12$_{68}$ —

CLUSTER NO.

#1: Administers (directs, manages). Plans and develops programs. Advises top level management.

#2: Inspects work place to identify hazards. Investigates to determine the cause of injuries/illnesses.

#3: Analyzes plans or specs. to identify hazards, develops operating procedures to control hazards.

#4: Provides education and training.

#5: Performs and analyzes tests to monitor for the presence of dusts, gases, etc.

#6: Performs engineering design to control hazards.

Intent

To determine the number of individuals involved in occupational safety and health at this facility, to categorize them in general terms, and to describe their major duties.

Definitions

For definitions of safety (injuries) and health (illnesses) professionals see Question #28.

Inclusions

Inclusions are the same as in Question #28.

Exclusions

Exclusions are the same as in Question #28.

Procedure

Categorize each individual according to the area (safety or health) which encompasses more than 50% of his/her time. Enter the total number of persons on the appropriate line. For each individual enter the cluster number which best describes the major portion of his or her duties.

Compatibility With NOHS

New question; asked only of those who respond affirmatively to Question #28.

Question:

30. Has your facility received industrial hygiene services on a consulting basis during the past 12 months?

1 Yes, from government sources

2 Yes, from non-government sources

3 No

Intent

To determine if the facility has received industrial hygiene services or consultation from outside sources during the past 12 months.

Definitions

Industrial Hygiene: See Question #28.

Consulting Basis: Advice, consultation, or services obtained from persons not employed at the facility.

Inclusions

Include visits from federal, state, and local government authorities where the consultation was provided as a service and was not for reasons of compliance or enforcement of health standards. Include visits from corporate headquarters personnel if they conducted an industrial hygiene walk-through investigation or on-site inspection. Include consultation from specialists employed by insurance companies.

Exclusions

Exclude visits from federal, state, and local government agencies made for the purpose of compliance or enforcement. Exclude all inspections and visits not conducted on the behalf of facility or corporate management such as those conducted on the behalf of the unions.

Compatibility With NOHS

Rewording of Question #10 and #11. Compatibility maintained; government aid and assistance separated from corporate or private outside assistance.

Question:

31. Has your facility received occupational safety services on a consulting basis during the past 12 months? %

1 Yes, from government sources

2 Yes, from non-government sources

3 No

Intent

To determine if the facility has received occupational safety services or consultation during the past 12 months.

Definition

Occupational Safety: See Question #28, Injury Prevention

Inclusions

Include visits from federal, state, and local government authorities where the consultation was provided as a service and was not for reasons of compliance or enforcement of safety standards. Include visits from corporate headquarters personnel if they conducted a safety survey walk-through investigation or on-site inspection. Include visits from specialists employed by insurance companies.

Exclusions

Exclude visits from federal, state, and local government agencies made for the purpose of compliance or enforcement. Exclude all inspections and visits not conducted on behalf of facility or corporate management such as those conducted on the behalf of the unions.

Compatibility With NOHS

Rewording of Question #10 and #13. Compatibility maintained; government aid and assistance separated from corporate or private outside assistance.

Question:

32. Do you have a program under which you regularly or periodically monitor the presence of physical agents such as heat, vibration, radiation, noise, and magnetic fields? $_{71}$

1 No (Skip to Question 34)

2 Yes (Circle yes or no for each physical agent listed below:)

		Yes	No
1.	Heat $_{72}$	1	2
2.	Vibration $_{73}$	1	2
3.	Radiation $_{74}$	1	2
4.	Noise $_{75}$	1	2
5.	Magnetic fields $_{76}$	1	2
6.	Other $_{77}$	1	2

Intent

To determine the existence of a company program of monitoring for certain physical agents as a part of its occupational health program.

Definitions

Regularly or periodically monitor applies only to established programs which monitor environmental levels of physical agents on a regular and/or predictable basis. Heat, vibration, noise, and magnetic fields are defined in Section VII.

Inclusions

Include tests using instrumentation only when the intent of the tests are to determine if employee health is potentially at risk.

Include contract monitoring performed by outside consultants at the request and direction of management.

Exclusions

Do not include any measurements that are simply measuring process conditions or any environmental measurements which are taken where no employee exposures could potentially exist. For example, the measuring of temperature and humidity inside a sealed vessel in a process loop should not be counted.

Do not include those monitoring tests that are not routinely performed. For example, special monitoring of new machines during the start-up and initial use stages should not be included.

Exclude monitoring tests where industrial hygiene is not part of the rationale for the conduct of the tests (i.e., monitoring of process conditions, for economic reasons only).

Compatibility With NOHS

Rewording of Question #42. Separates monitoring of physical agents.

Question:

33. How long do you retain the records of the monitoring program?

__ __ Years (If "forever" code "99")
(If "unknown" code "UK")

Intent

To determine the length of time that the company retains the records from its program of monitoring physical hazards.

Compatibility With NOHS

New question; asked only of those who responded affirmatively to Question #32.

Question:

34. Do you have a program under which you regularly or periodically monitor the presence of fumes, gases, mists, dusts, or vapors? $_{18}$

1 Yes

2 No (Skip to Questions 38)

Intent

To determine the existence of a company program to monitor certain conditions for the protection of the employees.

Definitions

Regularly monitor applies only to established programs which monitor levels of chemical materials on a regular, predictable basis. Fumes, gases, mists, vapors, and dusts are defined in Section VII.

Inclusions

Include tests taken with instruments only where the intent of the tests is to determine if the employee's health is potentially at risk.

Include situations where the monitoring is performed by someone other than the facility's management, such as monitoring by contract. Include monitoring programs established and/or conducted by or for the facility's insurance carriers provided that they are performed regularly or periodically. NOTE: A "Yes" response should be coded if the program includes any part of the facility.

Exclusions

Do not include any measurements that are simply measuring process conditions or any environmental measurement which are done where no employee exposures could potentially exist. For example, the measuring of temperature and humidity inside a sealed vessel in a process loop should not be counted. Exclude measurements that are taken for the sole purpose of determining if a fire or explosion potential exists in an area where no employees are at risk.

Do not include those monitoring tests that are not routinely performed. For example, special monitoring of new machines during the start-up and initial use stages should not be included.

Exclude monitoring tests where industrial hygiene is not part of the rationale for the conduct of the tests, such as monitoring of process conditions for economic reasons only.

Exclude all programs conducted by federal, state, or local government agencies and officials; exclude any one-time studies of the facility or areas within the facility. Exclude all non-periodic consultations by consultants, insurance carriers and others.

Compatibility With NOHS

Rewording of Question #42. Separates monitoring of chemical agents.

Question:

35. How is this monitoring conducted? ,,

1 Sample collection with laboratory analysis (Skip to Question 37)

2 Direct reading instruments

3 Both

Intent

To categorize the method of monitoring for this facility.

Inclusions

Inclusions are noted in Question #34.

Exclusions

Exclusions are noted in Question #34.

Compatibility With NOHS

New question; asked only of those who responded affirmatively to Question #34.

Question:

36. Which types of direct reading instruments are used in the monitoring program? Circle "yes" or "no" for each type listed below:

		Yes	No
1.	Direct mass measurement tests$_{20}$	1	2
2.	Fibrous aerosol monitors$_{21}$	1	2
3.	Detector tubes$_{22}$	1	2
4.	Infrared (I.R.) gas monitors$_{23}$	1	2
5.	Ultraviolet (U.V.) gas monitors$_{24}$	1	2
6.	Gas chromatograph monitors$_{25}$	1	2
7.	Electrochemical monitors$_{26}$	1	2
8.	Other "wet" chemical methods$_{27}$	1	2

Intent

To categorize the current practices of the facility with regard to direct-reading instrumentation.

Procedure

Either "yes" or "no" (code response "1" or "2") is circled for each applicable instrument type.

Compatibility With NOHS

New question; asked only of those who responded affirmatively to Question #34 and #35.

Question:

37. How long do you retain the records of the monitoring program?

__ __ **Years** **(If "forever" code "99")**
(If "unknown" code "UK")

Intent

To determine the length of time that the company retains records from its program of monitoring fumes, gases, mists, dusts, etc.

Compatibility With NOHS

New question; asked only of those who responded affirmatively to Questions #34 and #35.

Question:

38. Have any substitutions of chemical materials been made within the last 5 years?

1 Yes

2 No (Skip to Question 41)

Intent

To determine if there have been any substitution of chemical materials in the facility.

Definition

Substitution means to cease the use of one chemical material and initiate use of an alternative.

Exclusions

The substitution of one tradename product for another unless it was done for reasons related to the chemical content of both tradename products is not considered to be a substitution.

Procedure

If the response to the question is "2", skip to Question #41.

Compatibility With NOHS

New question.

Question:

39. Were any of these substitutions made for the primary purpose of reducing employee exposures?$_{31}$

1 Yes
2 No

Intent

To determine if the chemical substitution made was for the purpose of reducing or eliminating worker exposure to specific chemical agents.

Definition

See Question #38.

Inclusions

Include substitution of raw materials, ingredients, intermediates or finished products primarily for the purpose of protecting employee health and/or required because of a federal, state or local government ban on the production, trade, or marketing of specific chemicals.

Exclusions

See Question #38. Substitutions for economic or other reasons not dealing expressly with employee health should be coded "2" or "no".

Procedure

Chemical substitution for employee health reasons or due to regulatory requirements should be coded "yes" or "1".

Compatibility With NOHS

New question.

Question:

40. Were any of these substitutions made as a result of inspections of this facility by federal, state, or local authorities? _

1 Yes
2 No

Intent

To determine if chemical substitutions have been made as a result of government inspection activity.

Inclusions

Include only those substitutions of chemicals made as a direct result of government inspection(s) of the facility.

Exclusions

Do not include substitutions made as the result of consultation and/or advice from consultants, corporate staff, or insurance carriers.

Procedure

Ask Question #40 without regard to the response received to Question #39.

Compatibility With NOHS

New question.

Question:

41. Have any major equipment or process modifications been made within the last 5 years?

1 Yes

2 No (Skip to Question 45)

Intent

To determine if any major equipment or process modifications have been made during the past 5 years at the facility being surveyed.

Definition

Major Modification is a change in machinery, process, equipment, or physical layout which was significant enough to change the potential exposure of employees to chemical, physical or biological agents; or to fumes, dusts, mists, vapors, or particulates.

Inclusions

Include changes in machinery, equipment, process, physical layout and plant design or process modification.

Exclusions

Exclude any changes made to protect against injuries, such as machine guarding.

Procedure

If the response to Question #41 is "no," skip to Question #45.

Compatibility With NOHS

New question.

Question:

42. **Were any of these modifications made for the primary purpose of reducing employee exposures?**$_{34}$

1 **Yes**
2 **No**

Intent

To determine if the reason for the modification(s) cited in response to Question #41 was primarily for the purpose of reducing or eliminating employee exposure to chemical, physical, or biological agents.

Definition

See Question #41.

Inclusions

See Question #41.

Exclusions

See Question #41.

Procedure

All modifications performed primarily for economic or other reasons not dealing directly with occupational health should be coded "2." (No)

Compatibility With NOHS

New question.

Question:

43. Were any of these modifications made as a result of inspections of this facility by federal, state, or local authorities?$_{35}$

1 Yes
2 No

Intent

To determine if any of the modifications were made as the result of an inspection by government agencies.

Inclusions

Include only those modifications made as a direct result of inspections of this facility by government authorities.

Exclusions

Exclude modifications made as the result of consultation and/or advice given by consultants, corporate staff, or insurance carriers.

Procedure

Ask and record the response to Question #43 without regard to the response received on Question #42.

Compatibility With NOHS

New question.

Question:

44. What was the nature of the modification?$_{36}$

1. A redesign of the process
2. Enclosing the process
3. Equipment substitution
4. A redesign of the equipment
5. Combination of the above
6. Not listed here

Intent

To categorize the nature of the modification(s) performed at this facility within the last 5 years.

Inclusions

As in Questions #41 and #42.

Procedure

If more than one of the coded responses is appropriate, the proper code response is "5." If none of the coded responses are accurate, code a "6."

Compatibility With NOHS

New question.

Question:

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

1 Yes

2 No (Skip to Question 47)

Intent

To determine if exhaust air is recirculated within the facility. Also to alert the surveyor to this fact prior to the walk-through portion of the survey.

Definition

Recirculate exhaust air refers to the practice of capturing exhaust air from a process or work area and subsequent re-introduction of the exhaust air into the facility, usually following treatment to remove contaminants.

Exclusions

Air handling systems such as facility heating or cooling systems are not considered recirculation systems. Catalytic converters and other scrubbing devices attached to internal combustion engines (as used in air compressors, welding generators, forklifts, etc.) are not to be considered recirculation systems.

Procedure

If the response is negative, skip to Question #47.

Compatibility With NOHS

New Question.

Question:

46. What processes or areas are involved?

_____ _____

_____ _____

_____ _____

Intent

To determine the areas or processes within the facility where exhaust air is recirculated.

Inclusions

Any process or area which recirculate air as defined in Question #45.

Procedure

Asked only of those responding affirmatively to Question #45. Descriptive terms given by the person(s) interviewed are to be entered in the spaces provided.

Compatibility With NOHS

New question.

Question:

47. **Are there areas in this facility in which personal protective devices or equipment are required or recommended?**

1 **Yes, required**
2 **Yes, recommended**
3 **Yes, both**
4 **No (Skip to Question 53)**

Intent

To determine the company management's policy regarding the use of personal protective devices and equipment.

Definitions

Required means that there is a formal company policy that some or all employees must use personal protective devices as a condition of employment. This policy may or may not be enforced. Recommended indicates that management encourages employees to use personal protective devices but it is not a condition of employment. Personal protective devices and equipment include, but are not limited to, safety glasses, goggles, ear plugs, face shields, hard hats, gloves, steel-toed shoes, rubberized clothing, welding helmets and/or goggles, and respirators.

Inclusions

If only one work area or department requires or recommends the usage of personal protective devices, the response should be coded "1" or "2," as applicable. If a facility has some areas that recommend usage and some areas that require usage, the response should be coded "3."

Exclusions

Exclude cases where individual employees want to use personal protective gear and the use of protective devices is not required or recommended by the employer. The response in such cases should be coded "4."

Procedure

If the response to Question #47 is "no," skip to Question #53.

Compatibility With NOHS

Fully compatible with Question #36.

Question:

48. Who provides personal protective devices?

1 individual employees
2 employer
3 both
4 other (specify)_____

Intent

To determine who is financially responsible for the purchase of personal protective equipment.

Definitions

Personal protective devices and equipment are defined in Question #47.

Inclusions

Include reimbursement plans. For example, if employees purchase their own equipment and are reimbursed by the company, the response should be coded "2." Include in the "other" response situations where union, state or local government organizations provide the equipment. In situation where employees and the company share the cost, code "3," for "both."

Procedure

Asked only of those who respond affirmatively to Question #47.

Compatibility With NOHS

Fully compatible with Question #37.

Question:

49. Who has been designated to see to it that personal protective devices and equipment are serviced and maintained?

1 individual employees
2 employer representative
3 both
4 no one
5 other Specify_____

Intent

To determine if formal responsibility has been assigned to an individual or individuals for maintaining personal protective devices and equipment in proper operating condition.

Definitions

Servicing and/or maintaining refers to such activities as cleaning or changing filters or cartridges in respirators, repairing straps on safety goggles or face shields, filling air tanks, repairing broken lenses, etc. Personal protective devices are defined in Question #47.

Inclusions

"Designated" is the key word in Question #49. If the employer has directed the employees to maintain their own equipment and provides cleaning apparatus and work space, the response is coded "1." If the employees normally maintain their own equipment, but they have not been specifically charged or directed to do so by management, the response should be coded "4." If the employer has established procedures whereby a union or a governmental agency maintains the equipment, the response should be coded "5" with an explanation entered on the "specify" line.

Compatibility With NOHS

Fully compatible with Question #38.

Question:

50. In those instances where employees refuse to wear protective devices or fail to wear them properly, are corrective measures taken? $_{41}$

1 Yes

2 No (Skip to Question 53)

Intent

To determine if the employer has a functioning system of corrective actions for improper usage of protective devices, equipment or clothing.

Definitions

Corrective action is formal action by plant management against the individual involved. Improper means wearing of inappropriate clothing or devices, including respirators rendered non-functional due to improper facial fit.

Inclusions

Include such actions as personnel actions (transfer, removal, suspension, etc.) and fines levied by management.

Exclusions

Exclude non-formal actions such as verbal notification of wrong doing, etc. Exclude labor union sanctions against the employee.

Procedure

If the response to Question #50 is "no," skip to Question #53.

Compatibility With NOHS

New question.

Question:

51. Do those corrective measures involve economic penalties?[42]

1 Yes

2 No (Skip to Question 53)

Intent

To determine the extent to which employees are penalized by the employer because of failure to comply with company requirements for proper wearing of protective clothing, devices, and equipment.

Definitions

Economic penalties are defined as official disciplinary actions taken by management which result in a financial loss to the affected employee, either directly or indirectly.

Inclusions

Includes all official disciplinary actions which result in financial penalities to the employee. Such actions include fines, dismissal, reduction in work hours, reassignment or transfer (at a lower wage rate), suspension, loss of seniority credits, loss of shift differential, etc.

Exclusions

Exclude all actions which are not taken on behalf of plant management, such as labor union sponsored sanctions or fines against the employee.

Do not include medical or related costs incurred by the individual as a consequence of the improper wearing of protective devices, clothing or equipment, i.e. the costs to the employee of having metal chips removed from an eye because he was not wearing goggles.

Procedure

This question is asked only if the response to Question #50 is "yes." If the response to Question #51 is "no," skip to Question #53.

Compatibility With NOHS

New question.

Question:

52. Have any economic penalties been assessed in the past 12 months?[43]

1 Yes

2 No, we know of no instances where violations of company policy have occurred within the last 12 months.

3 No, although we know that there was a minimum of one violation of company policy within the last 12 months.

Intent

To determine whether formal corrective actions involving economic penalties have been taken in the last 12 month period as a result of employee refusal to wear protective devices, or employee failure to wear such devices properly.

Definitions

Economic penalties are defined in Question #51.

Inclusions

As in Question #51.

Exclusions

As in Question #51.

Procedure

This question is asked only of those who respond affirmatively to Question #51.

Compatibility With NOHS

New question.

Question:

53. Do you have a program under which you regularly or periodically conduct safety inspections of this facility?$_{44}$

1 Yes

2 No (Skip to Question 56)

Intent

To determine if the facility is inspected regularly or periodically for potential safety hazards.

Definitions

Regularly or periodically applies only to established programs which provide inspections on a regular, predictable basis.

Inclusions

Include only regular or periodic safety inspections of the facility performed as a result of management policy. Include regular or periodic inspections performed by consultants, insurance carriers and others at the request of management or with management participation.

Exclusions

Exclude any ad-hoc inspections. Also exclude any safety inspections precipitated by a mishap or injury. Exclude all inspections conducted by a government agency or authority. These are not facility management programs. Exclude all one-time studies of the facility or areas within the facility. Exclude all non-periodic inspections by consultants, insurance carriers and others.

Procedure

If the response to this question is negative, skip to Question #56.

Compatibility With NOHS

New question.

Question:

54. Are written results of these safety inspections required?$_{45}$

1 Yes
2 No

Intent

To determine if safety inspections must always result in written reports.

Definitions

Written results are defined as reports of the determinations arising from a safety inspection whether the determinations are positive or negative in nature. These reports need not be formal, as long as they represent at least a summation of inspection results.

Inclusions

Hand-written reports made as the result of an inspection should be included, if they are always written as a result of a safety inspection. Include narrative reports if they are transcribed in written form.

Procedure

This question is asked only if there was an affirmative response to Question #53.

Compatibility With NOHS

New question.

Question:

55. Are the results of the safety inspections posted or otherwise made routinely available to affected employees?$_{44}$

1 Yes
2 No

Intent

To determine whether or not affected employees are routinely provided the results of safety inspections.

Definitions

Posted is defined as mounted on walls, bulletin boards or other surfaces commonly used in the employee areas. Routinely available is defined as the normal practice, due to management policy, of providing the results of safety inspections to any affected employee. Inspection results can be either verbal or written. Affected employee is defined as a worker whose environment was included in a safety inspection.

Inclusions

Include any system instituted by management which routinely provides the results of safety inspections to the affected employees of the facility.

Exclusions

Exclude any reporting system not initiated and/or maintained by management. Exclude posting of government inspection results or union-sponsored inspection efforts.

Procedure

This question is asked only of those persons responding affirmatively to Question #53.

Compatibility With NOHS

New question.

Question:

56. Do you have a regularly scheduled preventive maintenance program?$_{47}$

1 Yes
2 No

Intent

To determine if the facility has a preventive maintenance program.

Definitions

Preventive maintenance program is defined as a management initiated process of inspection and corrective action undertaken prior to any actual failure of the facility assets, including the physical structure and related equipment.

Inclusions

Include programs in which a limited amount of maintenance and repair work is actually performed but which involves routine and regular inspections of the plant.

Exclusions

Exclude all programs whose frequency of inspection is less than once every three (3) years.

Compatibility With NOHS

New question.

Question:

57. Do you have a regularly scheduled formal safety training program for your employees?[46]

1 Yes
2 No

Intent

To determine if the facility has a regularly scheduled formal program of safety training for its employees.

Definitions

Generally, a safety training program is devoted to the recognition, evaluation, and control of safety hazards. Training programs include, but are not limited to: recognition of safety hazards such as unguarded moving machinery, inadequate fire protection, free-standing compressed gas cylinders, evaluation of potentially dangerous situations, who to contact, and what to do.

Inclusions

Include company-paid training programs that occur off-site if they are provided on a routine, regularly scheduled basis.

Exclusions

Exclude all training programs which are not formal in nature and are not presented by or on behalf of company management. Exclude all first-aid and emergency medical treatment (CPR, etc.) training programs. Exclude from consideration any after-the-accident discussions and safety seminars, as these are not considered "regularly scheduled." Also exclude any training that an employee may take voluntarily.

Compatiblity With NOHS

New question.

Question:

58. Do you have a program under which you regularly or routinely assess the employee's awareness of safety rules?

1 Yes
2 No

Intent

To determine if the facility management makes periodic assessments of the employee's awareness of safety rules pertinent to facility operations.

Inclusions

Include continual, informal assessment by management representatives if there is evidence that management initiates such assessment, and receives reports of employee awareness of safety rules.

Exclusions

Exclude "voluntary" or "employee-suggestion" input to management by employees concerning safety practices on the job.

Compatibility With NOHS

New question.

Question:

59. In those instances where employees are found to be in violation of the safety rules, are corrective measures taken?$_{se}$

1 Yes
2 No (Skip to Question 62)

Intent

To determine if the employer has a functioning system of corrective actions which can be used when safety rules are violated.

Definitions

Corrective action is defined as a formal action by plant management personnel against the individual involved.

Inclusions

Include personnel actions (transfer, removal, suspension, etc.), and fines levied by management.

Exclusions

Exclude non-formal actions such as verbal notification of wrongdoing. Exclude labor union sanctions against the employee.

Compatibility With NOHS

New question.

Question:

60. Do those corrective measures involve economic penalties?$_{51}$

1 Yes
2 No (Skip to Question 62)

Intent

As in Question #51.

Definitions

As in Question #51.

Inclusions

As in Question #51.

Exclusions

Exclude all actions which are not taken on behalf of plant management, such as labor union sponsored sanctions or fines against the employees.

Do not include medical or related costs incurred by the individual worker as a consequence of safety rule violation.

Procedure

This question is asked only of those responding affirmatively to Question #59. If the response to this question is negative, skip to Question #62.

Compatibility With NOHS

New question.

Question:

61. Have any economic penalties been assessed in the past 12 months?$_{52}$

1 Yes

2 No, we know of no instances where violations of company policy have occurred within the last 12 months.

3 No, although we know that there was a minimum of one violation of company policy within the last 12 months.

Intent

As in Question #52.

Definitions

Economic penalties are defined in Question #51.

Inclusions

As in Question #51.

Exclusions

As in Question #60.

Procedure

This question is asked only of those responding affirmatively to Question #60.

Compatibility With NOHS

New question.

Question:

62. How long are personnel records on terminated employees retained?

__ __ Years (If "forever", code "999")
(If "unknown", code "UK")

Intent

To determine the length of time records on terminated employees are kept by the company.

Inclusions

Include all recordkeeping systems which identify an individual and provide personal data on that individual.

Exclusions

Exclude recordkeeping systems that only identify a group of people collectively. Exclude medical recordkeeping systems.

Compatibility With NOHS

New question.

Question:

63. Do you keep employee absenteeism records?$_{56}$

1 Yes, showing specific nature of illness where appropriate
2 Yes, showing only the type of absence
3 Yes, without showing the type of absence
4 No

Intent

To determine if management keeps any absenteeism records and, if so, at what level of detail.

Definition

Employee absenteeism records refers to that information kept by management concerning the failure of employees to report to work when scheduled.

Inclusions

Include only those records kept by management over and above the records required by law. Use code "4" when the employer keeps only those records required by Federal, State, or local regulations or no records at all. Use code "3" when the employer keeps additional records, but merely indicates "present" or "absent". This occurs in industries such as the construction industry where all or part of the employees are paid only for those days actually worked. Use code "2" when the employer keeps additional records and indicates whether the absence is due to a particular situation such as "illness" or "personal leave." Use code "1" when the employer keeps records which indicate an absence is caused by sickness and, gives the specific nature, type, or symptoms of the sickness.

Exclusions

Do not include those records required by OSHA or State regulations.

Procedure

Ask the management representative the question, "Do you keep employee absenteeism records?" If the response given is not adequate to determine the proper code, additional questioning will be necessary.

For example, the response may simply be "yes." In this case ask, "Do these records show the specific nature of sickness?" If answered "yes," code a "1"; if not, ask, "Do these records show the nature of the absence?" If answered "yes," then code a "2." If answered "no," the proper code will be "3."

Compatibility With NOHS

Fully compatible with Question #33.

Question:

64. What is your rate of unscheduled absenteeism?

___ days per employee per year (If unknown, code "UK")

Intent

To determine the absenteeism rate for the establishment due to illness or injury.

Definitions

Unscheduled absenteeism is defined as the failure of employees to report to work when scheduled. Rate is defined as the number of days per year per employee.

Inclusions

Include only those days where the absence is due to illness, injury, or failure to report to work.

Exclusions

Do not include those days where the absence is due to vacation, jury duty, pre-arranged personal leave, maternity leave, strikes, layoffs, work cancelled due to the weather, etc.

Procedure

When the interviewee says he does not know the absenteeism rate, the interviewer should ask if the information is available from another individual or from the facility's personnel records. If the information is available from these sources, the interviewer should request that the information be obtained. If the response is given as being from 4.5 to 5.4 days per year the response should be coded "005." If the response is from 5.5 to 6.4 days per year, code "006." Where an employer provides a percentage rate, multiply that percentage by 240 workdays to determine the days per year per employee. If the absentee rate is not known, enter the code "UK."

Compatibility With NOHS

Fully compatible with Question #34.

Question:

65. What is your turnover rate among permanent employees in the nonadministrative areas?

__ __ % per year

Intent

To determine an overall turnover rate for employees engaged in non-administrative jobs.

Definitions

Permanent employees are employees which management expects to retain on a long-term basis (more that 1 year). Non-administrative is defined as those jobs and positions which are directly engaged in the production, packaging, inspecting, and shipping departments of the company. Do not include outside salespersons in this figure.

Inclusions

Include any permanent employee who is not an executive or a manager who works directly in the production, packaging, and shipping/receiving areas of the facility at least 50% of their work day.

Exclusions

Exclude temporary and seasonal employees from this calculation. Also exclude all executives and managers who do not work directly in the production, packaging, or shipping/receiving areas of the facility for at least 50% of their work day.

Compatibility With NOHS

New question.

Question:

66. May I see the latest Summary of Occupational Injuries and Illnesses Form (OSHA Form 200)? (OSHA regulations provide for inspection by NIOSH).[18]

1 Yes

2 No (or company does not keep one)

SURVEYOR: COPY THE FOLLOWING INFORMATION FROM THE OSHA FORM 200

Occupational Injuries

a. Number of deaths (column 1) ___

b. Number of injuries with lost workdays (column 3) ___

c. Number of injuries without lost workdays (column 6) ___

Occupational Illnesses

a. Skin diseases or disorders (column 7a) ___

b. Dust diseases of the lungs (column 7b) ___

c. Respiratory conditions due to toxic agents (column 7c) ___

d. Poisoning (systemic effects of toxic materials) (column 7d) ___

e. Disorders due to physical agents (column 7e) ___

f. Disorders associated with repeated trauma (column 7g) ___

g. Deaths (column 8) ___

h. Number of illnesses with lost workdays (column 10) ___

i. Number of illnesses without lost workdays (column 13) ___

Intent

To determine the incidence of injuries and illnesses among the facility employees.

Definitions

OSHA Form 200 refers to the reporting form issued to industry by the U.S. Department of Labor, Occupational Safety and Health Administration.

Procedure

Code a "1" if the facility keeps, and allows surveyor access to the OSHA 200 Form. If the facility either does not keep, or refuses access to the form code a "2." If the response to the question is "yes," enter the data requested by this question directly from the facility copy of the OSHA 200 Form. Where necessary, total the column entries from the facility copy of the OSHA 200 Form, and enter this total in the appropriate location within the body of Question #66.

Where no data is provided (equivalent to a zero) on the facility OSHA 200 Form, enter a right-justified zero in the appropriate space.

Compatibility with NOHS

Fully compatible with Question #49.

FIGURE 1B. Part I-Management Interview

NATIONAL OCCUPATIONAL EXPOSURE SURVEY
Part I – Management Interview

1. Card Code [1] (1)

2. Revision Code 0 1 0 (2–4)

   Surveyor ID _ (5)

3. Date Survey Started _ _ / _ _ / _ _ (6–7 / 8–9 / 10–11) (mo/day/yr)

4. Facility Number _ _ _ _ _ _ (12–17)

••• GENERAL FACILITY INFORMATION •••

5. What is you major activity? _____ (18)

_____ (79)

CARD [2] (1)

6. What are your chief products, services, lines of trade, etc? _____ (18)

_____ (79)

CARD [3] (1)

7. SIC codes (observed) _ _ _ (18–21)

   _ _ _ (22–25)

   _ _ _ (26–29)

8. Approximately how many years has this facility been involved in this activity?

   _ _ _ Years (If "unknown" code "UK") (30–32)

9. How many shifts do you have at present? _ (33)

FIGURE 1B. Part I-Management Interview (Cont.)

10. How many hours per shift?

___ ___ (If irregular, code "99").
34 35

11. How many people are on your payroll for all shifts at the present time?

Males ___ ___ ___
36 40

Females ___ ___ ___
41 45

Total ___ ___ ___
46 50

12. Of this total number, how many are normally in the work areas as opposed to the administrative or other areas?

___ ___ ___
51 55

13. Are there any labor unions operating in this facility? ___
56

1 No

2 Yes; list complete union names and acronyms (initials)

CARD 4
1

Union Names	Acronym
_____	___ ___ ___
16 24
_____	___ ___ ___
25 31
_____	___ ___ ___
32 38
_____	___ ___ ___
39 45
_____	___ ___ ___
46 52
_____	___ ___ ___
53 59
_____	___ ___ ___
60 66

FIGURE 1B. Part I-Management Interview (Cont.)

CARD 5 (1)

*** MEDICAL SERVICES ***

14. Is there a formally established health unit at this facility? (18)

1 Yes, physician in charge

2 Yes, registered nurse in charge

3 Yes, licensed practical nurse in charge

4 Yes, other in charge

5 No

15. Do you have an employee at this facility with formal first-aid training, who has been formally designated to provide emergency medical treatment? (19)

1 Yes, full-time

2 Yes, part-time

3 No

16. Do you have on your payroll one or more on-site physicians to give your employees medical care? (20)

1 Yes, full-time

2 Yes, part-time

3 No

17. Do you have a formal arrangement with any outside source (physicians or clinics) to give your employees access to the care of a physician? (21)

1 Yes, physician will travel to this facility on call

2 Yes, at clinic (not at this facility)

3 Yes, physician is based at this facility either full or part-time

4 No

18. Estimate the average number of physician hours that are devoted to your facility per week.

(22)__(23) hours per week

19. Does this facility have one or more nurses on the payroll to provide care for employees? (24)

1 Yes

2 No (Skip to Question 21)

20. How many registered nurses and licensed practical nurses are on the payroll at this facility?

RN (27)__(29)

LPN (30)__(32)

21. Estimate the average number of nursing hours that are devoted to your facility per week.

_ _ _ _ hours
33 — 36

22. Do you provide the following examinations or tests to all or to selected groups of employees on a periodic basis?

	No	Yes, All	Yes, All Exec. & Mgmt Only	Yes, All Production Workers Only	Yes, for Selected Mgmt and/or Production Workers
Opthalmology 37	1	2	3	4	5
Audiometric 38	1	2	3	4	5
Blood tests 39	1	2	3	4	5
Urine tests 40	1	2	3	4	5
Pulmonary function 41	1	2	3	4	5
Chest X-rays 42	1	2	3	4	5
Allergy/Sensitization 43	1	2	3	4	5
Immunizations (flu, etc.) 44	1	2	3	4	5
23. Before new employees are hired or placed, are they required to take a medical examination? 45	1	2	3	4	5
24. Do you record health information about a new employee on some regular form? 46	1	2	3	4	5
25. Do you require medical examinations of your employees who return to work after an illness? 47	1	2	3	4	5
26. Do you require medical examinations of your employees when their employment is terminated? (Exit examination) 48	1	2	3	4	5

27. How long are medical records and other health information records retained?

_ _ _ Years (If "forever" code "999")
49 — 51 (If "unknown" code "UK")

FIGURE 1B. Part I–Management Interview (Cont.)

••• INDUSTRIAL HYGIENE AND SAFETY PRACTICES •••

28. Do you employ full-time individuals at this facility whose major responsibilities are in the area of prevention of occupational injuries or illnesses?$_{52}$

1 Yes, injury prevention
2 Yes, illness prevention
3 Yes, both injuries and illnesses
4 No (Skip to Question 30).

29. How many full-time occupational health and safety specialists are employed at this facility?

$\overline{53}\,\overline{54}$ Safety (injuries)
$\overline{55}\,\overline{56}$ Health (illnesses)

For each of those individuals, please write in the appropriate activity number from the activity clusters listed below:

	CLUSTER NO.	
Individual #1$_{57}$ —	#1:	Administers (directs, manages). Plans and develops programs. Advises top level management.
Individual #2$_{58}$ —	#2:	Inspects work place to identify hazards. Investigates to determine the cause of injuries/illnesses.
Individual #3$_{59}$ —	#3:	Analyzes plans or specs. to identify hazards, develops operating procedures to control hazards.
Individual #4$_{60}$ —	#4:	Provides education and training.
Individual #5$_{61}$ —	#5:	Performs and analyzes tests to monitor for the presence of dusts, gases, etc.
Individual #6$_{62}$ —	#6:	Performs engineering design to control hazards.
Individual #7$_{63}$ —		
Individual #8$_{64}$ —		
Individual #9$_{65}$ —		
Individual #10$_{66}$ —		
Individual #11$_{67}$ —		
Individual #12$_{68}$ —		

30. Has your facility received industrial hygiene services on a consulting basis during the past 12 months?$_{69}$

1 Yes, from government sources
2 Yes, from non-government sources
3 No

FIGURE 1B. Part I-Management Interview (Cont.)

31. Has your facility received occupational safety services on a consulting basis during the past 12 months? $_{70}$

    1 Yes, from government sources
    2 Yes, from non-government sources
    3 No

32. Do you have a program under which you regularly or periodically monitor the presence of physical agents such as heat, vibration, radiation, noise, and magnetic fields? $_{71}$

    1 No (Skip to Question 34)
    2 Yes (Circle yes or no for each physical agent listed below:)

		Yes	No
1.	Heat $_{72}$	1	2
2.	Vibration $_{73}$	1	2
3.	Radiation $_{74}$	1	2
4.	Noise $_{75}$	1	2
5.	Magnetic fields $_{76}$	1	2
6.	Other $_{77}$	1	2

33. How long do you retain the records of the monitoring program?

    $\underline{\quad}\underline{\quad}$ $_{78}$ $_{79}$ Years (If "forever" code "99")
    (If "unknown" code "UK")

CARD 6 $_{1}$

34. Do you have a program under which you regularly or periodically monitor the presence of fumes, gases, mists, dusts, or vapors? $_{18}$

    1 Yes
    2 No (Skip to Questions 38)

35. How is this monitoring conducted? $_{19}$

    1 Sample collection with laboratory analysis (Skip to Question 37)
    2 Direct reading instruments
    3 Both

36. Which types of direct reading instruments are used in the monitoring program? Circle "yes" or "no" for each type listed below:

		Yes	No
1.	Direct mass measurement tests $_{20}$	1	2
2.	Fibrous aerosol monitors $_{21}$	1	2
3.	Detector tubes $_{22}$	1	2
4.	Infrared (I.R.) gas monitors $_{23}$	1	2
5.	Ultraviolet (U.V.) gas monitors $_{24}$	1	2
6.	Gas chromatograph monitors $_{25}$	1	2
7.	Electrochemical monitors $_{26}$	1	2
8.	Other "wet" chemical methods $_{27}$	1	2

37. How long do you retain the records of the monitoring program?

$_{28}$ $_{29}$ Years (If "forever" code "99")
(If "unknown" code "UK")

38. Have any substitutions of chemical materials been made within the last 5 years? $_{30}$

1 Yes
2 No (Skip to Question 41)

39. Were any of these substitutions made for the primary purpose of reducing employee exposures? $_{31}$

1 Yes
2 No

40. Were any of these substitutions made as a result of inspections of this facility by federal, state, or local authorities? $_{32}$

1 Yes
2 No

41. Have any major equipment or process modifications been made within the last 5 years? $_{33}$

1 Yes
2 No (Skip to Question 45)

42. Were any of these modifications made for the primary purpose of reducing employee exposures? $_{34}$

1 Yes
2 No

FIGURE 1B. Part I-Management Interview (Cont.)

43. Were any of these modifications made as a result of inspections of this facility by federal, state, or local authorities?$_{35}$

1 Yes
2 No

44. What was the nature of the modification?$_{36}$

1 A redesign of the process
2 Enclosing the process
3 Equipment substitution
4 A redesign of the equipment
5 Combination of the above
6 Not listed here

45. Does this facility recirculate exhaust air from any process or plant area?$_{37}$

1 Yes
2 No (Skip to Question 47)

46. What processes or areas are involved?

_____ _____

_____ _____

_____ _____

47. Are there areas in this facility in which personal protective devices or equipment are required or recommended?$_{38}$

1 Yes, required
2 Yes, recommended
3 Yes, both
4 No (Skip to Question 53)

48. Who provides personal protective devices?$_{39}$

1 individual employees
2 employer
3 both
4 other (specify)_____

49. Who has been designated to see to it that personal protective devices and equipment are serviced and maintained?$_{40}$

1 individual employees
2 employer representative
3 both
4 no one
5 other Specify_____

FIGURE 1B. Part I-Management Interview (Cont.)

50. In those instances where employees refuse to wear protective devices or fail to wear them properly, are corrective measures taken?$_{41}$

    1 Yes
    2 No (Skip to Question 53)

51. Do those corrective measures involve economic penalties?$_{42}$

    1 Yes
    2 No (Skip to Question 53)

52. Have any economic penalties been assessed in the past 12 months?$_{43}$

    1 Yes
    2 No, we know of no instances where violations of company policy have occurred within the last 12 months.
    3 No, although we know that there was a minimum of one violation of company policy within the last 12 months.

53. Do you have a program under which you regularly or periodically conduct safety inspections of this facility?$_{44}$

    1 Yes
    2 No (Skip to Question 56)

54. Are written results of these safety inspections required?$_{45}$

    1 Yes
    2 No

55. Are the results of the safety inspections posted or otherwise made routinely available to affected employees?$_{46}$

    1 Yes
    2 No

56. Do you have a regularly scheduled preventive maintenance program?$_{47}$

    1 Yes
    2 No

57. Do you have a regularly scheduled formal safety training program for your employees?$_{48}$

    1 Yes
    2 No

58. Do you have a program under which you regularly or routinely assess the employee's awareness of safety rules?$_{49}$

    1 Yes
    2 No

FIGURE 1B. Part I-Management Interview (Cont.)

59. In those instances where employees are found to be in violation of the safety rules, are corrective measures taken?$_{50}$

    1 Yes
    2 No (Skip to Question 62)

60. Do those corrective measures involve economic penalties?$_{51}$

    1 Yes
    2 No (Skip to Question 62)

61. Have any economic penalties been assessed in the past 12 months?$_{52}$

    1 Yes
    2 No, we know of no instances where violations of company policy have occurred within the last 12 months.
    3 No, although we know that there was a minimum of one violation of company policy within the last 12 months.

••• GENERAL RECORDKEEPING INFORMATION •••

62. How long are personnel records on terminated employees retained?

    $\underline{\quad}\underline{\quad}$ Years (If "forever", code "999")
    (If "unknown", code "UK")

63. Do you keep employee absenteeism records?$_{54}$

    1 Yes, showing specific nature of illness where appropriate
    2 Yes, showing only the type of absence
    3 Yes, without showing the type of absence
    4 No

64. What is your rate of unscheduled absenteeism?

    $\underline{\quad}\underline{\quad}$ days per employee per year (If unknown, code "UK")

65. What is your turnover rate among permanent employees in the nonadministrative areas?

    $\underline{\quad}\underline{\quad}$ % per year

FIGURE 1B. Part I-Management Interview (Cont.)

CARD 7

66. May I see the latest Summary of Occupational Injuries and Illnesses Form (OSHA Form 200)? (OSHA regulations provide for inspection by NIOSH).$_{18}$

1. Yes
2. No (or company does not keep one)

SURVEYOR: COPY THE FOLLOWING INFORMATION FROM THE OSHA FORM 200

Occupational Injuries

a. Number of deaths (column 1) $_{19-20}$
b. Number of injuries with lost workdays (column 3) $_{21-23}$
c. Number of injuries without lost workdays (column 6) $_{24-26}$

Occupational Illnesses

a. Skin diseases or disorders (column 7a) $_{27-29}$
b. Dust diseases of the lungs (column 7b) $_{30-32}$
c. Respiratory conditions due to toxic agents (column 7c) $_{33-35}$
d. Poisoning (systemic effects of toxic materials) (column 7d) $_{36-38}$
e. Disorders due to physical agents (column 7e) $_{39-41}$
f. Disorders associated with repeated trauma (column 7g) $_{42-44}$
g. Deaths (column 8) $_{45-46}$
h. Number of illnesses with lost workdays (column 10) $_{47-49}$
i. Number of illnesses without lost workdays (column 13) $_{50-52}$

B. Surveyor's Manual and Definitions

Recordable Potential Exposure

For purposes of this survey, a potential exposure must meet two criteria to be recorded:

1. A chemical, physical or biological agent or a tradenamed product must be observed in sufficient proximity to an employee such that one or more physical phases of the agent or product are likely to enter or contact the body of the employee, and

2. The duration of the potential exposure must meet the minimum duration guidelines, i.e., it must present a potential exposure for at least 30 minutes/week (on an annual average) or be used at least once per week for 90% of the weeks of the work year.

The following types of potential exposures may be encountered:

1. Observed Potential Exposure

   a. Any potential exposure to chemical, physical, or biological agents which is observed directly by the surveyor.

2. Inferred Potential Exposure

   a. If there is an observable dust accumulation or other physical evidence which indicates that an agent is present in the workplace, a potential exposure to this substance should be recorded if there are persons working in the immediate area of the agent(s) and the minimum duration guidelines are met.

   b. If the process is not functioning at the time of the surveyor's observation, the surveyor must, through questioning, identify and record any potential exposures which in his/her judgement, are associated with the functioning process.

Duration Guidelines

A recordable potential exposure must be classified into one of the following two categories:

F=FULL TIME	Potential exposure time to the agent must be greater than four (4) hours per day on a daily basis for at least 90% of the company's work year or a standard work year.
P=PART TIME	Potential exposure time to the agent must be greater than 30 minutes per week on an annual average and not full-time or must occur at least once each week for 90% of the year's work weeks.

Any potential employee exposure not meeting the above duration definitions will not be recorded.

Trade Name Products

Frequently, employees will be observed to be potentially exposed to substances which are known only by a trade name. In this instance, the name of the substance as it appears on the container should be recorded. Additionally, the name of the manufacturer, the manufacturing division, if given, and the manufacturer's address must also be recorded. If the containers of the trade name product are not accessable or the aforementioned manufacturer information is not available directly at the work-site, the surveyor must make every effort to obtain the name and address of the manufacturer. In some instances, the required information can be obtained from plant purchasing records. If the manufacturer's name, address, etc. cannot be obtained from available sources, the surveyor should record the distributor or any other pertinent information that may help identify the manufacturer.

Exclusions to Recordable Potential Exposures

When a surveyor encounters a situation in which a substance is completely enclosed and in the surveyor's professional judgement, a potential exposure could not be realized except under accidental or totally unpredictable situations, a potential exposure will not be recorded.

Any potential exposure occurring as a result of non-work activities will not be recorded. Thus the surveyor should not record potential exposures resulting from the personal use of alcohol, tobacco, prescribed, over-the-counter, or recreational drugs, perfume, etc.

Contract workers will not be considered for this survey. Only employees who at the time of the survey are on the payroll of the firms included on the list of establishments to be surveyed are to be recorded.

Drivers who operate motor vehicles "off-site" will not be surveyed as to their potential exposures. However, any drivers who are employees of the facility and help to load or unload at the assigned facility location will be surveyed as to their potential exposures.

Special Situations

1. Construction Activities and Field Work Crews:

   Conducting a survey of a firm in the construction industry (SIC'S 15, 16, and 17) may pose difficulties not normally encountered during surveys of firms in other industries. While the surveyor's list of firms to be surveyed will give the permanent business address of the construction firm, it is anticipated that the majority of the firm's employees will be working at job sites physically removed from this address. The surveyor should construct a list of all of the firm's jobsites which will be "active" during the scheduled survey time in the PSU. This listing should also include any "active" jobsites which are outside the PSU, but within reasonable driving distance (generally not more than two hours each way). If the list of active jobsites appears to be manageable, then all sites should be visited and surveyed . If the task appears unmanageable due either to the number of active jobsites or to the distance(s) involved, the team leader should be consulted for instructions.

The surveyor should not neglect to survey the headquarters of construction firms to record any potential employee exposures which might exist. This is especially important in the case of special trade contractors who may prepare certain materials at headquarters prior to their use at a job site.

2. Process Not Observed:

When an operation is encountered which is not being performed or a process is observed which is not being utilized, the surveyor should try to assess the operation using the information provided by the facility representative or employees. Questions should be asked which will serve to identify any potential exposures that could result from that type of operation. "Process not observed" situations can include seasonal and graveyard shift operations, maintenance or janitorial activities, out-of-plant personnel and absent personnel.

The surveyor shall ask:

a. Facility representatives or workers to completely describe how the operation is performed.

b. What materials are used and for how long.

c. If there are any dusts, mists, vapors, etc. generated by the operation.

d. About the presence of noise, radiation or any other physical agents.

e. Who operates the process.

f. If any control mechanisms are present.

If the surveyor obtains enough information to adequately describe the potential exposures and the potential exposures satisfy the duration guidelines, these potential exposures shall be recorded. If the information is not sufficient, the surveyor shall make arrangements to revisit the facility when the operation is being performed.

3. Foodstuffs and Their Thermal Decomposition Products:

Potential exposures to food products during their preparation or handling will be recorded as either Food-Thermal Decomposition or as Foodstuff. This category also includes alcoholic beverages. The surveyor should record as "Foodstuff" all materials which go into edible items prepared in restaurants, cafeterias, snack-bars, and similar establishments. In facilities such as bakeries, meat packaging plants, sausage manufacturers, canneries, etc. where additives or ingredients may have both food and non-food usage, such additives or ingredients may not be recorded as "foodstuff" but must be recorded as a potential exposure to the specific agent(s) observed. For example, whole wheat flour, baking soda, acetic acid, salt, and sugar are some of the materials used in commercial baking operations. The potential employee exposures to be recorded are to

these specific agents, not "foodstuffs." Carbon dioxide resulting from fermentation (as well as its use in the carbonation process) is not considered a "foodstuff", and should be recorded as a potential exposure.

4. Grinding and Abrasive Machining Operations:

   When a surveyor observes an operation using abrasives such as grinding wheels, belts, disks, cut-off wheels, drums, shot, etc., potential exposures arising from both the abrasive and the material being machined must be considered. For example, if a worker is grinding and smoothing the edges of a mild steel tube using an abrasive wheel, the surveyor must record the potential exposure to the mild steel as well as that to the grinding wheel, assuming of course, that the criteria for potential exposure are met.

5. Facility Comfort Heating Systems:

   Potential exposures emanating from unvented heating systems or devices are the specific emissions associated with that system or device. All occupants of the room or building should be considered to be potentially exposed. Infrared radiation from such sources, however, should not be recorded.

6. Motor Oil:

   Potential exposures from regular gasoline engine or diesel engine motor oil may be recorded without trade name or manufacturer if it is being used only as a motor oil.

7. Gasoline:

   When potential exposures to gasoline are observed, the potential exposure should be recorded as "leaded gasoline", "non-leaded gasoline" or "gasoline, lead content unknown".

8. Carbon Arc Lamps:

   Potential exposures associated with the use of carbon arc lamps are carbon monoxide, carbon dioxide, oxides of nitrogen, ozone, ultraviolet, and infrared radiation. When the surveyor uses the mnemonic code CARC, a computer program will automatically fill in the aforementioned potential exposures.

<u>Potential Chemical Exposures Not to be Recorded</u>

1. Water
   Water in any form will not be recorded as a potential exposure.

2. Oxygen
   Potential exposure to oxygen will not be recorded except as appropriate in welding operations.

3. Hand Soaps

The routine use of standard hand soaps should not be recorded as a potential exposure. However, the use of disinfectant hand solutions used by personnel in the healing arts and allied professions should be recorded as well as the use of waterless hand cleaners typically used by mechanics.

4. Substances in a Solid Block Form

Substances existing in a solid block state will not normally be considered as a potential exposure unless it is observed that some of the material is being deposited on an employee as a result of handling or some other form of contact.

Potential Exposures to Physical Agents

Unless otherwise noted, all potential employee exposures to the following physical agents will be recorded. See Appendix D for a list of approved mnemonic codes.

1. Air Pressure Variations (Increased and Decreased):

Pressure variations will not be recorded unless it can be determined that the atmospheric pressure over the total body is greater than 1.5 or less than 0.7 atmospheres. When possible, the actual pressure exposure should be noted.

2. Temperature Variations (Heat and Cold Stress):

Only artificially created hot and cold environments to which the entire body is potentially exposed are recordable. Heat and/or cold stress must be recorded if, in the surveyor's professional judgement such a potential exposure exists and documentation (workplace temperatures) can be provided.

3. Lasers and Masers:

Potential exposures resulting from lasers or masers should be recorded as laser or maser, noting the type, power,and wavelength of the laser or maser.

4. X-Ray Radiation:

X-Ray radiation is a form of ionizing radiation similar to gamma radiation but produced artificially by electron bombardment. The radiation generating source as well as its use should be noted.

5. Infrared Radiation:

Infrared radiation may be generated from three major sources: thermal, luminescent, and electromagnetic. A potential exposure to infrared radiation should be recorded whenever there is a device in use specifically designed to produce infrared radiation or if this radiation is emitted from one of the above named sources, and all other criteria for recording potential exposures are met.

6. Ultraviolet Radiation (UV, UV-Black Light, UV-Germicidal):

   A potential exposure to ultraviolet radiation will be recorded whenever there is a device in use specifically designed to generate ultraviolet radiation or if it can be determined that there is a continuous electric arc discharging in the open atmosphere. Ultraviolet radiation in the black light range is to be recorded as "Ultraviolet Radiation-Black Light". Ultraviolet radiation from a germicidal lamp should be recorded as "Ultraviolet Radiation-Germicidal." Ozone emission normally accompanies the production of ultraviolet radiation unless it is in the black light range and should also be recorded as a potential exposure.

7. Microwave Radiation:

   Microwave radiation will be recorded as a potential exposure whenever it can be determined through observation and/or questioning that a microwave generating device is in use, and all other criteria for recording potential exposures are met.

8. Radio Frequency Radiation:

   A potential exposure to radio frequency radiation will be recorded whenever it can be determined through observation and/or questioning that a device designed specifically to generate radio frequency radiation is in use, and all other criteria for recording potential exposures are met.

9. Continuous Noise:

   Any noise in the employee's work environment equal to or exceeding 85dBA (slow response) will be recorded as a potential exposure. Noise pulses less than 1 second apart will be considered continuous.

10. Impact Noise:

    A potential exposure to impact noise will be recorded if it can be determined that the noise generating events occur one second or more apart and that the intensity is greater than 130dBC (fast response).

11. Ultrasonic Noise:

    Ultrasonic noise will be recorded as a potential exposure when it can be determined through observation and/or questioning that an ultrasonic generating device is operating in the employee's work environment, and all other criteria for recording potential exposures are met.

12. Vibration-Whole Body:

    Whole body vibration is the action on the human body of machinery and/or material moving rapidly in alternately different directions. Whole body vibration results when the whole body mass is subjected to mechanical vibration, such as that experienced while riding on a tractor seat.

13. Vibration-Segmental:

Segmental vibration is defined as vibration in which only part of the body (e.g. the hands with chain saw operation) is in direct contact with the vibrating medium.

Potential Exposures to Biological Agents

Potential employee exposures to viral, rickettsial, bacterial, fungal, and parasitic organisms are to be recorded. The genus and species of the biological agent must be noted.

Potential employee exposures to components of biological systems, such as blood, urine, sputum or fecus are to be recorded. The species of origin, as determined by observation and/or questioning, must be noted.

Intended Control Guidelines

Before recording any device or work practice procedure as a control of a potential employee exposure, the surveyor must ascertain that the device or procedure is in fact intended to control or mitigate the employee exposure.

Functioning/Non-Functioning of Intended Controls

Except as otherwise noted, a control will generally be considered as functioning unless it is readily apparent to the surveyor that the control is not functioning as designed.

Engineering Controls

1. Local Exhaust Ventilation (LV):

Local exhaust ventilation controls the contaminant at its point of generation, thus preventing it from reaching the worker's breathing zone and ultimately spreading throughout the building atmosphere. A local exhaust system may include industrial process enclosures such as paint spray booths, welding booths, abrasive blasting booths, and casting shakeout enclosures. Local exhaust ventilation also includes canopy hoods, slot ventilation hoods, flexible hose ventilation, tailpipe exhaust systems, downdraft hoods, and sidedraft hoods. The surveyor must consider the system to be functioning unless in the surveyor's professional judgement the system is not capturing the contaminant at its point of generation.

2. Natural Ventilation (NV):

Any operation conducted outdoors will be considered to be controlled by natural ventilation. Also included are air movements produced by vertical convection current and thermal ventilation (nonducted). Exterior doors or windows which are opened to provide ventilation are considered natural ventilation.

3. Local Gravity Ventilation (LG):

   Local gravity ventilation is defined as a system using ducted thermal ventilation with no mechanical fans, such as stove flues, melt pots, etc., which are designed to prevent the spread of air contaminants throughout the building atmosphere.

4. Dilution Ventilation (DV):

   Dilution ventilation is the dilution of contaminated air with uncontaminated air in the general area, room, or building for the purpose of health hazard or nuisance dust control. This includes systems with:

   (a) Supply fans in which air is used to create a slight positive pressure which forces general room air out of the building through relief vents or openings.

   (b) Exhaust fans which allow air to be removed from a space by creating a slight reduction of pressure (negative pressure) which causes outdoor air to be brought in through vents or openings.

   (c) Both exhaust and supply air (make-up) fans.

Notes on Ventilation Controls

1. If both local exhaust ventilation and dilution ventilation are observed controlling a process, only the local exhaust system should be recorded as a control.

2. In no case will a local exhaust system also be considered as being a dilution ventilation system.

3. The type of ventilation system observed in use during the conduct of the survey should be recorded.

4. General dispersion fans as well as air handling systems for heating and air conditioning systems are not to be considered as providing ventilation control.

5. If several controls are used for the same operation at different times, the situation should be recorded as one set of exposures with all the observed controls applied to these potential exposures. If, during a portion of the operation no controls are used, a no control (NC) code should be recorded in the appropriate box. To determine if controls are functioning or not in "mixed" control situations, each control must be evaluated at the time of its use. To avoid any confusion, the surveyor should use note statements to more fully explain this type of "mixed control" situation.

Respiratory Protective Devices

If a respiratory protective device (respirator) is being used in a work area, the specific type of respirator must be determined and the appropriate code (Appendix C) entered in the intended control column of the Part II coding form. If the surveyor determines that the respirator is being worn incorrectly it should be considered to be non-functioning. If the respirator being used is not appropriate for the type of contaminant to which the worker is potentially exposed, the specific type of respirator being used should be recorded with a non-functioning notation. For example, a surveyor might observe a particulate filter respirator being worn by an employee potentially exposed to organic solvent vapors. The surveyor should record the particulate filter respirator being worn as a control, but would code an "N" in the F/N column indicating that the respirator is non-functional as a control for organic solvent vapor.

Rules for Coding Cutting, Welding, Brazing, Soldering and Thermal Cutting

The surveyor will often encounter welding operations and other allied processes in the workplace. Since many of these types of processes are commonly used and have similar potential exposures, an abbreviated form of coding has been designed.

When the surveyor observes a welding operation, he will determine the type of welding being performed and will assign a three letter mnemonic from the Process Coding Table contained in Appendix H. He will also record all input materials associated with that type of process, such as, fuels, metals, fluxes, shields, gases, consumable electrodes, etc. in accordance with the protocol detailed in Appendix H. On the coding form the mnemonic will precede all inputs associated with that type of process, except when recording a trade name. When coding a trade name do not use a mnemonic with the trade name or the manufacturer. Instead, place the mnemonic after the PUT term.

No attempt need be made by the surveyor to record outputs from the process, such as, fumes, dusts, gases, UV-light, etc.,even if these potential exposure agents are obvious to the surveyor. The outputs will be entered by a computer program wherever the surveyor has recorded a welding or allied process mnemonic and the input products (See example below). More difficult outputs such as in combustion by-products of trade name flux material will be resolved after the composition of these materials have been identified. Specific examples of the welding and allied processes convention are found in Appendix H.

EXAMPLE

Surveyor's Record		Edit Adds
Process Type	Inputs	Outputs
Oxyfuel Gas welding OFW	fuels, base metals, filler metals, fluxes, shields	fumes, gases, dusts radiation, vibrations, heat

Chronic Trauma

The identification of chronic trauma hazards involve the following:

1. surveillance of worker's activities, in contrast to surveying their environment and,

2. the observation of repetitive physical or mental activities and those that occur on a continuous basis.

The concept of "chronic trauma" injury is often referred to as "wear and tear" or cumulative injury. For example, repetitive pounding with a hammer can cause a chronically sore forearm and elbow (tendonitis). Low back problems, shoulder soreness, neckaches, and headaches may all result from certain work activities that involve repetition. In addition, a worker may develop leg and foot problems as a result of continuous or motionless standing at a work station while attending or operating a machine, such as a cash register. Similarly, continuous inactivity or repetition may lead to mental chronic trauma manifested as boredom and fatigue. It should be understood that it is the repetition or continuation of certain events that produces the "wear and tear" disorders, not the severity of a single work activity.

Eleven basic activities or situations listed in Appendix F have been identified as potential causes of chronic trauma health disorders. These activities or situations can be subdivided as follows: (a) postures, i.e., body positions or movements, (b) transport motions involving either simple arm movements to move small objects, or large movements that require shoulder involvement, and (c) hand manipulations involving either fine, focalized finger movements, or larger more forceful hand/wrist motions. The three remaining chronic trauma categories to be identified involve interactions between the worker and work process, such as (a) work pace controlled by a machine or assembly line, (b) watching or monitoring equipment, and (c) unusual lighting or glare problems present in the work area.

The surveyor must identify the eleven chronic trauma hazards defined in Appendix F and record them in the same manner as they would a potential exposure to a chemical, physical, or biological agent, except that chronic trauma is, by definition, controlled only by administrative procedures. Any other intended control observed, except no control, should be coded as non-functional.

C. Part II Survey Form Preparation

The Part II-Exposure Data form (shown as Figure 2) is used to record potential employee exposures to chemical and biological agents or to physical hazards observed during the facility walk-through investigation. In addition to certain identifying information, the surveyor records data concerning: (a) occupation titles, (b) recordable exposures, (c) the numbers of employees potentially exposed, (d) the control measures used and (e) the conditions associated with the potential exposure.

The instructions on the following pages are related to the special information spaces provided, or to the columns used to group related information. The instructions provide the guidelines for recording and coding information gathered as a result of the walk-through survey. Information from this portion of the survey will be converted to an automated data processing medium; strict adherence to the standards is therefore required.

The number of Part II forms to be completed depends on the size and activities of the facility surveyed. If the surveyor does not observe any recordable potential exposures during his walk-through survey, it will not be necessary to complete a Part II Survey Form.

Data Field: Identification Codes

Duplicate into each line below				
Card Code 1	Revision Code 2 4	Surveyor ID 5	Date Survey Started 6	Facility Number 12 17
8	0 1 0		M M D D Y Y	

Intent

To provide a means to aggregate the complete set of observations recorded during the walk-through portion of a facility survey.

Definitions

The pre-printed Card Code "8" is specific to the Part II Survey Form. The pre-printed Revision Code "010" is common to all Survey Forms. The surveyor-entered Date Survey Started, and Facility Identifier (designated as NUMBER on the Part I and Part II Survey Forms, ID on the preface, and ID CODE on the Part III Survey Form) must be identical in the corresponding data fields of all Survey Forms completed for an individual facility survey. Surveyor ID is a one-letter code assigned to each surveyor by survey Headquarters. See the preface material A and Part I, Questions 1 through 4 for further examples and definitions of these data.

Inclusions

Only alphabetic codes A through Z are permitted for Surveyor ID.

Exclusions

Alphabetic characters may be used only in the Surveyor ID.

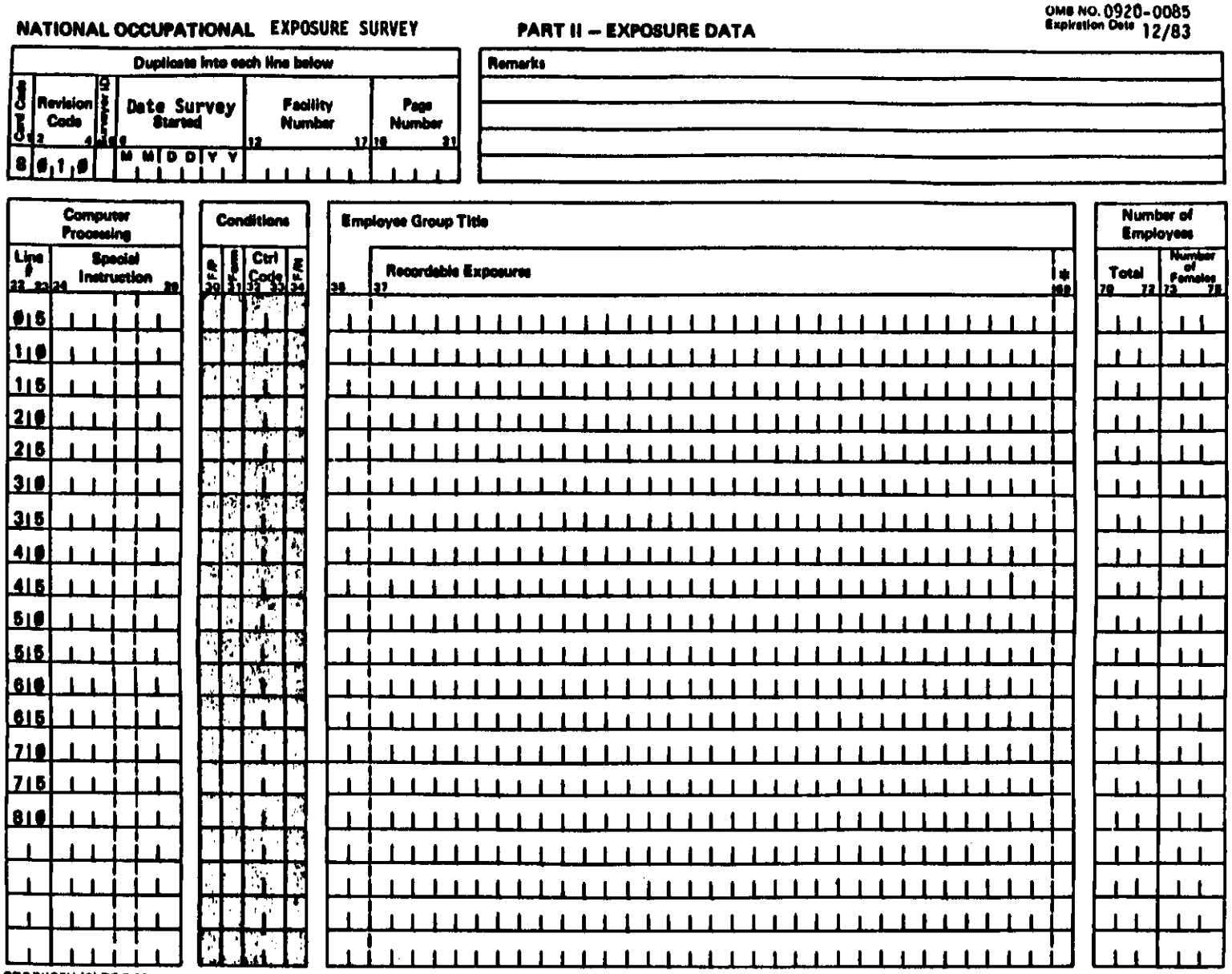
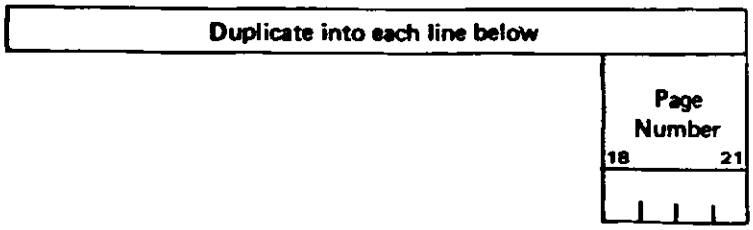


FIGURE 2. Part II-Exposure Data

Data Field: Page Number



Intent

To provide a unique identifying and sequencing number for each Part II form. The Page Number enables the surveyor to refer to any particular entry on the Part II form, and also permits computer verification of completeness to guard against the loss of forms in transit.

Definition

The Page Number is a consecutive sequence number (beginning with 0001) applied to the Part II Survey Forms of a given survey.

Inclusions

Only the numerical values of 0001 through 9999 may be used. All pages must be numbered.

Exclusions

Unnumbered pages are not permitted.

Procedure

1. Arrange the Part II Survey Forms in the sequence of observations made.

2. Apply the Page Number consecutively, beginning with 0001. Because of data processing considerations, the Page Numbers should be applied carefully and accurately.

Data Field: Line Number

Computer Processing	
Line # 22 23	Special Instruction 24 29
0|5	
1|0	
1|5	
2|0	
2|5	
3|0	
3|5	
4|0	
4|5	
5|0	
5|5	
6|0	
6|5	
7|0	
7|5	
8|0	
|	
|	
|	
|	

Intent

To provide a means of identifying each line of data recorded on the Part II Survey Form during a facility walk-through survey.

Definitions

The Line Numbers are used to sequence the data for computer processing, to allow the surveyor to insert additional lines of data, and to permit copying previously recorded data.

Inclusions

Only the numbers 01 through 99 may be used.

Exclusions

Do not use letters, punctuation marks, or other special characters or symbols.

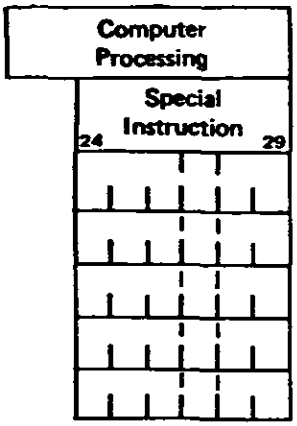
Procedure

Additional survey information may be placed in the proper sequence without using the Insert (INS) special instruction set by utilizing the four "floating number" spaces at the bottom of the page. Interline additions can be made by assigning an appropriate line number for the desired point of insertion. There must be no duplication of numbers on the same page.

Examples:

Two lines of data need to be inserted between lines 50 and 55. The first of the "floating line" spaces will be numbered 51, and the second space 52. The computer will insert this data after line 50 and before line 55. If no insertions are required, the "floating line" spaces can be utilized in the normal fashion. If they are so used, they should be numbered 85, 90, 95, 99 to allow for any insertion later, if necessary.

Data Field: Special Instruction



Intent

To provide for the capability of employing certain techniques and conventions in recording exposure observations; to record information which does not fit into the standard format of Part II; and to employ various options to make the coding effort easier.

Definition

Special instructions refer to a set of instructions and conventions that may be used to (1) describe certain exposure conditions, and (2) specify coding techniques designed to reduce the amount of handprinting required.

Inclusions

This column should only be used for the special computer instructions specified below. The capital letters indicate the instructions, and the lower case letters supply a reference number, as follows:

pppp = Refers to the page number of a Part II form.
ll = Refers to the line number of a Part II form.
nnn = Refers to a special instruction sequence number on the Part II form.

1. TRN = Describes the name of a trade name product.

2. MFG = Lists the name and address of the manufacturer of a trade name product. It must be a part of the TRN special instruction.

3. DST = Lists the name and address of the distributor of a trade name product. It must be a part of the TRN special instruction.

4. NTE E = Provides a note when either (1) a situation or exposure is not entirely known or understood; (2) a trade secret exists; (3) a classified area exists; or (4) the surveyor wants to code an explanation or comment on a particular situation. This statement must be ended with an "E".

5. PRO = Describes the process being performed by a team of
   E workers. This statement must be ended with an "E".

6. PUT = Indicates "product use term." It must be a part of the TRN special instruction.

7. ****** = Indicates "TRADE SECRET" or "END TRADE SECRET" and encloses data to be handled as Trade Secret. Such data is recorded in the Recordable Exposure columns (37-68).

8. CPY = Indicates a copying function. The first ppppll is the START
   ppppll COPY and the second ppppll is the STOP COPY. The copying
   ppppll function will begin with START terminate after processing the STOP ppppll.

9. INS = Indicates that a line or group of lines is to be inserted
   ppppll following some previous lines not necessarily on the same
   E page. After coding the data to be inserted, this instruction set must have coded with it the ppppll after the inserted data. This statement must be ended with an "E".

10. C = Indicates that a line of information represents the continuation of the previous line.

11. E = Indicates that the line of information is the end of a set of related information, and is placed in column 24 on the line following the set of related information.

Exclusions

No codes, other than the ones listed under the inclusions, may be used.

Data Field: Remarks

Remarks

Intent

To provide space for recording additional or special information for which space is not provided elsewhere on the Part II Survey Form.

Inclusions

Brief, precise notes regarding the data on the Part II Form, including:

1. number of shifts worked in the area being observed;

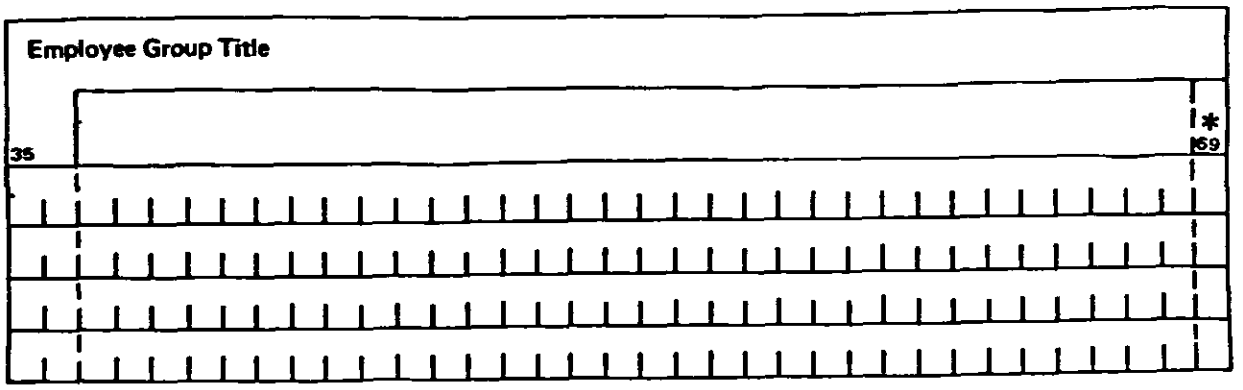
2. presence of contract workers;

3. operations or parts of operations not observed;

4. description of product(s) being manufactured in the area being observed;

5. reminders to the surveyor of special situations observed, or additional inquiries which need to be made of facility personnel or management.

Data Field: Employee Group Title



Intent

To describe in sufficient detail the occupational title that best identifies an employee group.

Definition

Employee group is a general term for one or more employees who can be treated as a homogenous group for purposes of the survey. An employee group is characterized by: identical job titles and exposure to the same agents. If either of these characteristics differ, a separate employee group must be established for the affected employees.

Inclusions

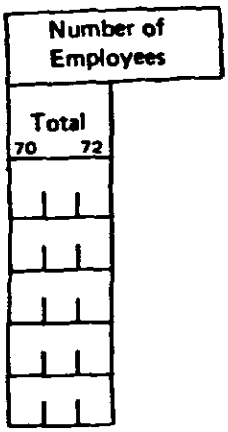
Include sufficient detail in the employee group title to reduce ambiguity regarding the employees' job function. In many cases, this will mean that in addition to the general term describing the occupations (such as welders, fork lift operators, truck drivers, etc.) the type of equipment operated will also be indicated.

Examples: Arc welders, electric fork lift operators, dump truck drivers.

Exclusions

Non-specific and/or insufficiently descriptive group titles should not be used. Since the occupation group titles will be restructured into codes, it is absolutely necessary to be as specific as possible to enable the coders to properly classify a team of workers.

Data Field: Number of Employees - Total



Intent

To quantify the total number of employees (male & female) in an employee group potentially exposed to specific chemical, biological, or physical agents.

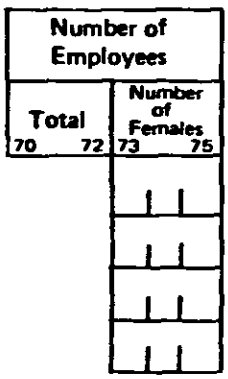
Definitions

Number of employees is the sum of the members of the employee group, regardless of sex, who are exposed to chemical, physical, or biological agents. Employee group is as defined previously.

Procedure

Insert the total number of employees in an employee group who are potentially exposed to chemical, biological, or physical agents.

Data Field: Number of Employees - Number of Females



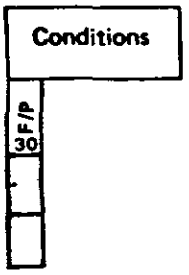
Intent

To quantify only the number of female employees in the exposure group.

Procedure

Insert the number of female employees in the groups potentially exposed to chemical, biological or physical agents.

Data Field: Exposure Duration



Intent

To indicate the approximate length of time per working day that an employee groups is potentially exposed to a recordable exposure.

Definitions

Recordable exposure is defined under Recordable Exposure Name. Exposure duration is the coded abbreviation of the approximate length of time an employee group is potentially exposed to a recordable exposure.

Inclusions

Include only the following codes:

F = Full time	Potential exposure time is greater than 4 hours/day on a daily basis for at least 90% of the company's work year or a standard work year.
P = Part time	Potential exposure time is greater than 30 minutes/week (on an annual average) and not full time or must occur at least once per week for 90% of the weeks of the work year.

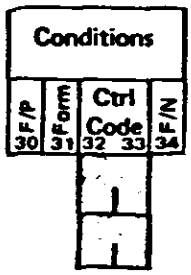
Exclusions

Only the codes listed in inclusions are allowed.

Procedure

The duration code is recorded on the same line as the recordable exposure name. In the case of a continued or multi-line exposure name, duration must be coded on the last line of text.

Data Field: Intended Control Code



Intent

To describe the intended control measures taken to protect the employees at risk to the potential exposures specified.

Definition

Intended control code is defined as a structured, computer-processable code which describes the measures that are being taken to protect the employees. These codes can be utilized to describe control of an occupational safety or health hazard.

Inclusions

Appendix C, Intended Control Codes, presents the allowable codes that may be entered in these spaces of the Part II form.

Exclusions

Codes other than the ones presented in the Intended Control Codes list are not to be used.

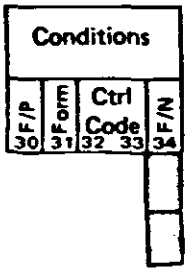
Procedure

The proper Intended Control Code is selected and entered from Appendix C.

The control code is recorded on the same line as the recordable exposure name. In the case of a continued exposure name, the control code must be coded on the last line of text.

Codes used to describe multiple controls associated with a potential exposure are entered on subsequent lines. All other fields are left blank.

Data Field: Functioning/Non-Functioning (F/N)



Intent

To record whether the intended exposure control is functioning as designed.

Definition

Functioning/Non-functioning refers to whether the intended control measure is providing an appropriate level of protection from a potential exposure.

Inclusions

The code F = indicates a functioning potential exposure control measure.

The code N = indicates a non-functioning potential exposure control measure.

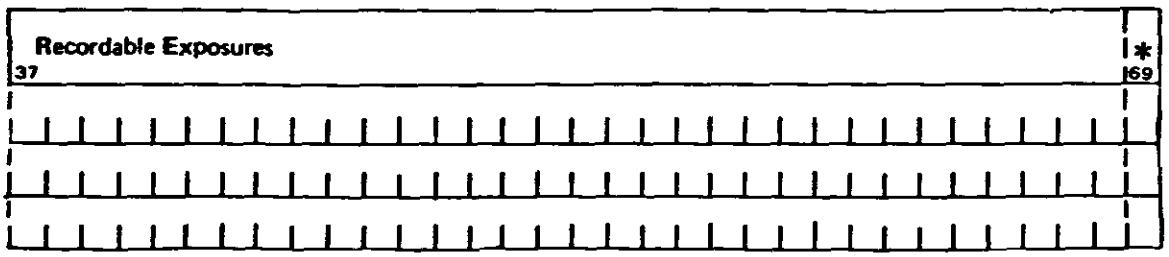
Exclusions

Only the letters F or N may be used.

Procedure

Select the codes F or N and insert in the space provided. All control types with the exception of "NC" (no-control) will be either functioning or non-functioning.

Data Field: Recordable Exposure Name



Intent

To describe, as specifically as possible, the recordable name of the chemical, physical, or biological potential exposure(s) observed.

Definition

Recordable exposure name refers to the specific name of a chemical, physical or biological agent to which one or more employees are potentially exposed in the facility. The product name and the manufacturer or distributor of a tradename product within a tradename (TRN) set may be used in lieu of a specific exposure name. A potential exposure-causing situation may be described if accompanied by the NTE special instruction. A process may be defined if accompanied by the PRO special instruction.

Inclusions

Include the precise name of a recordable potential exposure. Always use the most specific information available to describe a potential exposure. Examples of precise names are as follows:

1.	Potential chemical exposures:	Cadmium oxide 2-Butanone Asbestos	Benzene Titanium dioxide Lead
2.	Potential physical exposures:	Continuous noise Infrared radiation Whole body vibration	
3.	Potential biological exposures:	Polio virus Tapeworms	Blood (human) Muscle tissue (hamster)

Exclusions

Vague, non-standard, or colloquial terms must not be used to describe a recordable exposure (e.g., Mineral dust, Abrasives, Paint thinner, Noise, Vibration).

Procedure

1. Potential chemical exposures. The name selected to describe a potential chemical exposure should unambiguously describe the potential exposure situation. The specific chemical name or formula, such as carbon tetrachloride, H_2SO_4, penicillin, benzene, or trichloroethylene should be used.

2. Potential physical exposures. The most common physical hazards are continuous noise, whole body vibration, and infrared radiation. The proper identifier for the potential exposure should be printed legibly in the space provided.

3. Potential biological exposures. Potential exposures to viral, rickettsial, bacterial, fungal, and parasitic organisms are potential biological exposures. Potential exposures to tissue, blood, and waste products of biological organisms (i.e., in medical laboratories) are also potential biological exposures.

4. Product Use Term. When the recordable potential exposure is in the form of a tradename product, the use, function, or purpose of the tradename product (such as "solvent" or "degreaser") is coded in the recordable potential exposure name field after the product (TRN) and its manufacturer or distributor (MFG/DST) have been coded. The acceptable product use terms are listed in Appendix E. If the product is manufactured in the plant, and if you cannot determine its use, function or purpose, the Produced-In-Plant (PIP) notation should be entered in columns 37-39 on the same line as the PUT statement.

5. Text Information. (In conjunction with Special Instructions). The Special Instructions capability is used in conjunction with the recordable Exposure Name to code potential exposures that do not fit into the conventional categories of chemical and biological substances, physical conditions, or product use terms. In addition, it is also possible to use the Special Instructions capabilities to short-cut the recording of repetitive potential exposure information.

The Special Instructions serve six major functions:

1. To code potential exposures to substances for which chemical compositions are unknown. The special instructions TRN, MFT, and DST fall in this category.

2. To automatically duplicate information recorded elsewhere on the Part II forms. The special instruction CPY may be used to duplicate previously recorded information.

3. To insert lines which are inconvenient to insert using floating line numbers. The special instruction INS is used for such purposes.

4. To code information in free-form text to clarify a potential exposure situation or industrial process. The special instructions NTE and PRO are examples of free-form text coding.

5. To code the product use term associated with a tradename product. These terms are used in conjunction with the special instruction PUT.

6. To indicate that certain areas of the plant, processes within the plant, or the use of specific agents are to be handled as trade secret. The special instruction "******" is used for this purpose.

The instructions C (Continued) and E (End) are used in connection with the special instructions to overcome writing space restrictions and indicate the termination of a given special instructions set. An asterisk(*) must be placed in column 69 preceding any continuation line.

The use and formats of the various special instructions are as follows:

1. Tradename Statement Set: Manufacturer Statements (MFG)
   Distributor Statements (DST)
   Tradename Statements (TRN)
   Product Use Terms (PUT)

Inclusions

When a surveyor sees a commercial tradename product being used in the workplace, he or she will often have no idea of the components of the product.

Part of the NIOSH procedure for determining product ingredients and the potential exposures resulting from the use of this product necessitates the recording of the name of the manufacturer or distributor of the product and the full address, if available. Manufacturer or distributor data is usually found on the label attached to the product container. In some cases it may be necessary to inquire at the facilities' purchasing department for this information.

The original definition of tradename must consist of the special instruction MFG or DST followed by a product name or tradename with the special instruction TRN and at least one product use term record with the special instruction PUT. The tradename and manufacturer/distributor records can be continued with the use of the special instruction C. The product use term record can also be continued with the conditions recorded on the last line of the term.

The "product use term" (PUT) coded within the tradename set must be contained in the product use term file against which incoming data is edited. Duration and control data including functional or non-functional notation must be recorded also. Any multiple controls will be coded on the lines following the product use term.

A numbered TRN record with no product name is a recalled tradename. When a tradename is recalled, the original definition of the tradename set having that same group of numbers is assumed to be present within that specific facility survey. If the surveyor has reason to change the duration of control recorded in the original definition of the tradename set, he may do so by recording new condition information on the same line as the recalled TRN. This is called "overriding." When conditions are overridden, the original definition (i.e., tradename description, MFG or DST description and product use term) of the tradename set is recalled, but the new information on duration and control supersedes the corresponding information from the original numbered TRN record.

When the surveyor sees a group of tradename products distributed or made by the same company, that are, in his opinion, used for the same purpose, such as cleaning compounds, he may record them in a "shortcut tradename set." The shortcut tradename set allows the surveyor to record a series of tradename products made or distributed by a single company in a string before recording the product use term.

If, within a shortcut tradename set (explained above), there are tradenames with numbers, they may be recalled later by coding TRN with the appropriate numbers. However, when the recall feature is used on a shortcut tradename set only the numbered tradename, manufacturer, or distributor and the product use terms are recalled, not the entire tradename set. (Product use terms within a shortcut tradename set apply to all the tradenames in that set).

Formatting Special Instructions

MFG Code name and address of manufacturer (code "$" as delimiter between all elements such as name, address, division name, multiple cities and states and/or zip codes). At least two $'s must be coded. A MFG or DST special instruction may be numbered in columns 27, 28, and 29 for recall to avoid writing out all the pertinent data when the same MFG or DST is observed in another location.

DST Code name and address of distributor (code "$" as delimiter between all elements such as name, address, division, etc.). Record all information available, including division name, multiple cities and states and/or zip codes. At least two $'s must be coded.

TRN Code name of product. Record all information available including batch numbers and pigments. If the product is an aerosol, indicate such by coding "(AEROSOL)" at the end of the name given on the label. As for the special instructions MFG or DST, a TRN may be numbered for recall.

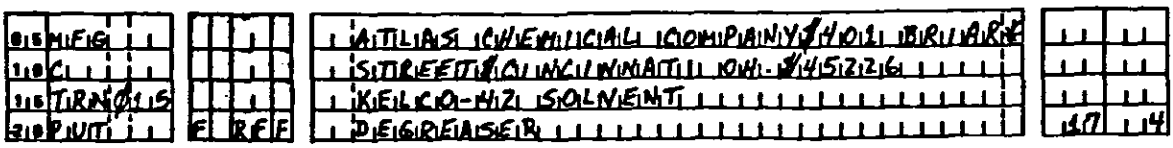
PUT Product use term. Record the term from the product use term list which most closely describes the observed use of the product. (See discussion of PUT term).

As shown in the following examples, the codes MFG or DST are recorded in columns 24-34 of the Part II form, and the identification of the MFG or DST is coded in columns 37-68.

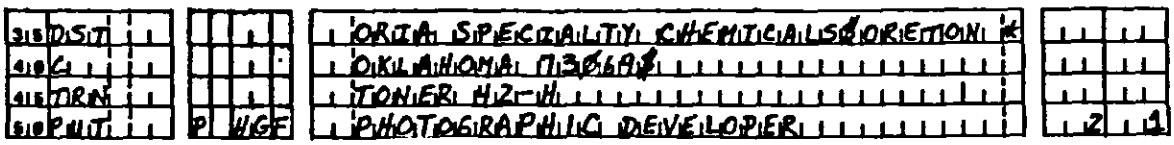
Special Notes: Identifier information regarding DST's or MFG's must be recorded exactly as they are presented on the product label, with elements separated by $'s. Each DST or MFG set must contain at least two $'s. If the city of location for the DST or MFG is unknown, this fact must be recorded. It is also essential that the surveyor record the tradename exactly as it is given on the product container or provided by facility personnel.

Examples:

A. MFG



B. DST



Exclusions

Tradename sets may not contain a CPY special instruction nor may they contain NTE or PRO statements sets.

2. The Note Statement (NTE)

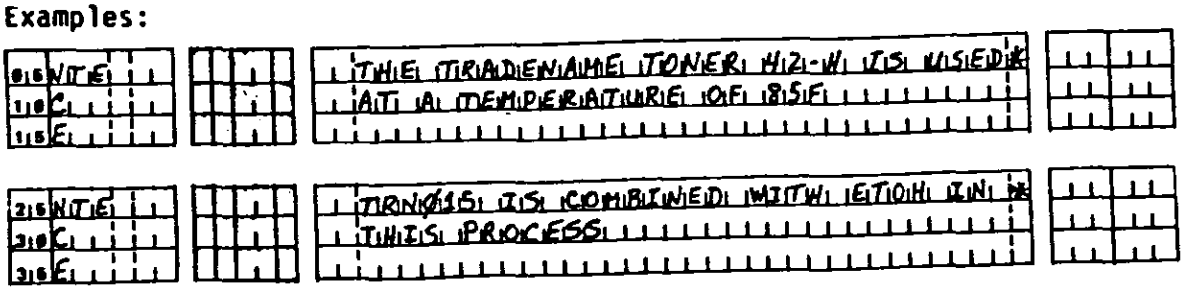
Inclusions

When a surveyor sees a situation which requires comment, a note statement set is used.

The surveyor codes NTE in the special instruction field and on the same line enters a prose description, comment or note statement in the recordable exposures field. If additional lines are needed, an asterisk "*" is placed in column 69 and on the next line, a "C" is coded in column 24 of the special instruction field. The alphabetic text of a note statement set is not edited. A note statement set must have an "E" coded in the special instruction field on the line following the prose description.

Note statement sets sometimes do not stand alone--they may refer to preceding or subsequent potential exposures or special instruction definitions. For example, to code special instruction about a TRN, the surveyor refers to the TRN within the text of the note statement. This can be done by referring to the tradename by numerical designation, if the TRN has been previously defined. A NTE statement may be contained within an INS set. (See examples.)

Examples:



Exclusions

The NTE statement set may not contain a CPY or PRO special instruction set nor can a NTE statement be numbered for subsequent recalling. Tradename sets cannot be contained within a NTE statement set as a special instructions. A NTE statement may not be contained within a TRN or NTE set.

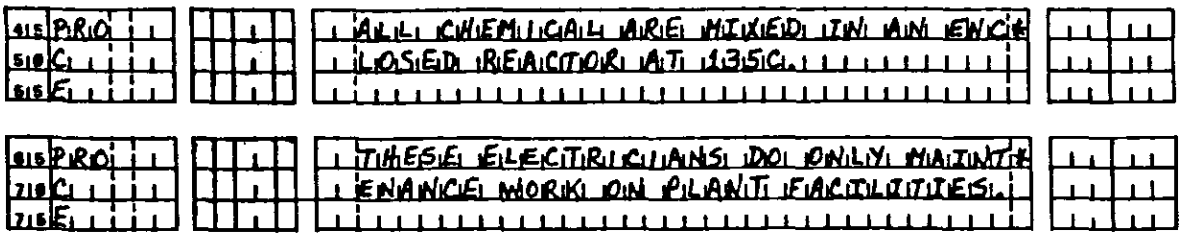
3. The Process Statement (PRO)

Inclusions

When the surveyor wants to code information about a particular industrial process or steps in an operation, a process statement set is used.

The surveyor codes PRO in the special instruction field and a prose description in the recordable exposures field. If additional lines are needed, an asterisk "*" is placed in column 69, and on the next line, a "C" is coded in column 24 of the special instruction field. The alphabetic text of a process statement set is not edited. A process statement must have an "E" coded in the special instruction field following the last line of text. Process statement sets can refer to employee group titles in the body of the text.

Examples:



Exclusions

The PRO statement set may not contain any other special instruction set nor can PRO statement sets be numbered for subsequent recalling. A PRO statement may refer to any previous or subsequent information by referring to the data within the text of the PRO.

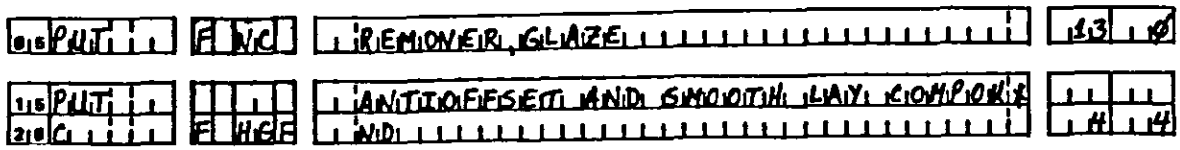
4. The Product Use Term (PUT)

Inclusions

The Product Use Term (PUT) is a necessary element of a Tradename Set. It serves the purpose of describing the use of the product as observed during the survey. It also serves as the concluding element of a Tradename Set.

Only those PUT terms stated on the "NOES Product Use Terms" list provided are to be utilized within the Special Instruction "PUT". Note that "PUT" is coded in columns 24-26, conditions of exposure are coded in columns 30, and 32-34, and the narrative is coded in columns 37-68. A PUT statement may also be continued, as shown in the following examples.

Examples:



It is recognized that the initial PUT list may not cover all possibilities. To allow for this, a procedure for proposing an additional or "candidate" term has been developed. The procedure is as follows:

A. Determine that no term on the PUT list adequately describes the observed use of the tradename product.

B. Find the term on the PUT term list that most clearly matches you observation of tradename product use.

C. Code a "#" sign after the PUT term that most closely matches your observation, then code the term which you wish to nominate as a candidate for addition to the initial PUT list.

Exclusions

No term other than those contained in Appendix E will be acceptable, except as detailed in the candidate term procedure.

5. The Trade Secret Statement

Inclusions

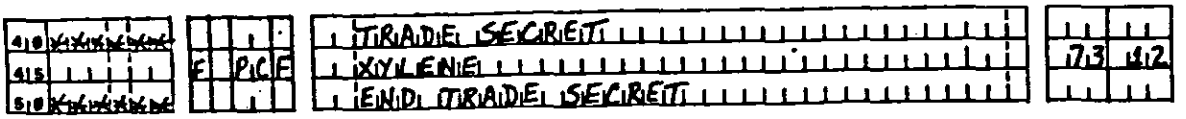
The Trade Secret Statement set is utilized to provide complete confidentiality for data considered to be trade secret. When using this format, the surveyor shall record the trade secret data separately from the rest of the survey walk-through observations. Upon receipt, survey headquarters will physically separate the trade secret data and apply the special security measures of separate storage and automation to assure confidentiality.

Trade secret data may include product use, product formulation, process data, or any other information which is considered to be confidential by the facility management.

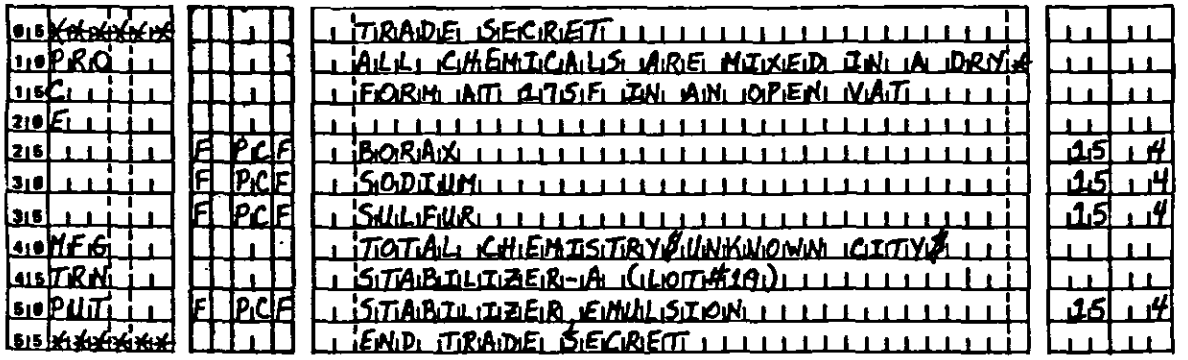
The Trade Secret Set is encoded by asterisks in columns 24-29 and "TRADE SECRET" in columns 37-48. Following this line, all data considered Trade Secret is fully encoded in normal fashion. At the conclusion of the set of Secret data, asterisks are again encoded in columns 24-29 and "END TRADE SECRET" in columns 37-48. Normal survey coding will then resume on the following page.

Examples:

A. The facility management views their use of xylene in specific process as Trade Secret information.



B. The facility management views the description of a process (the PRO statement), and the chemicals used as Trade Secret information.



Exclusions

The Trade Secret Set:

1. May not contain numbered (recalled) TRN, MFG, or DST.
2. May not include a CPY, INS or short-cut TRN set.
3. May not be included in the range of a CPY, INS or NTE.
4. Must be the only data (except for survey data, facility number, and page number) on that page of the survey.

6. The Copy (CPY) Special Instruction

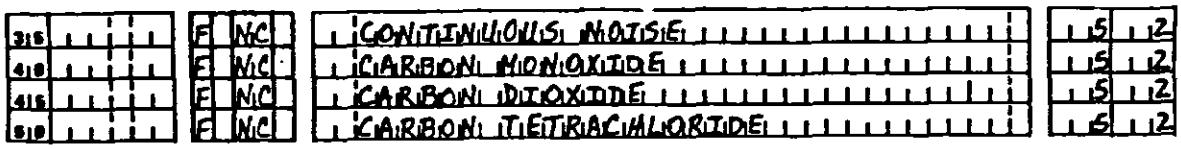
Inclusions

The copying operation will begin with the first page and line number coded under the CPY statement and include the last page and line number coded under the CPY statement. If any part of a special instruction set is to be copied, the entire set must be copied or a coding error will result. Any inserted data falling within the range of the CPY will be copied.

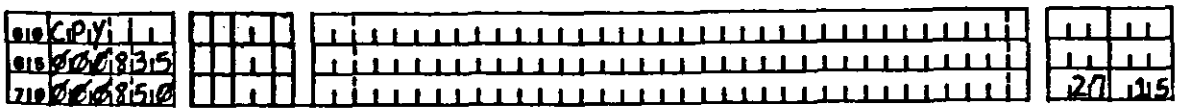
If the surveyor wants to change the conditions under which the previously defined data was recorded, it may be done by coding the new information on the "stop copy" line. However, a change in any condition code requires that all condition data be re-recorded, and the new codes applied to all exposure data falling within the range of the CPY statement. A CPY statement may be inserted, using the INS special instruction.

Examples:

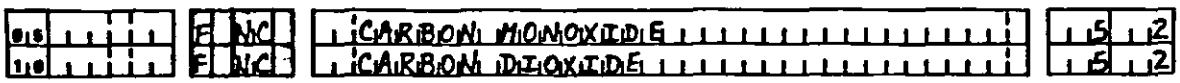
A. The original data (from survey page 8) shown immediately below is copied on a following survey page. The conditions of exposure are identical in this case.



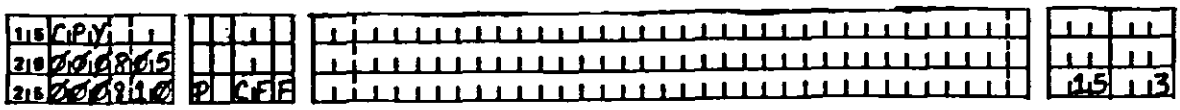
copied as:



B. The original data (from survey page 8) shown immediately below is copied on a following survey page. The conditions of exposure are different.



copied as:



Exclusions

No other information can be contained within a copy statement set. A CPY must refer to previously defined potential exposure lines or special instruction sets. Employee group titles may not be copied. The CPY range may not contain another CPY statement set. Neither may a CPY statement set be contained in tradename sets or NTE special instruction sets.

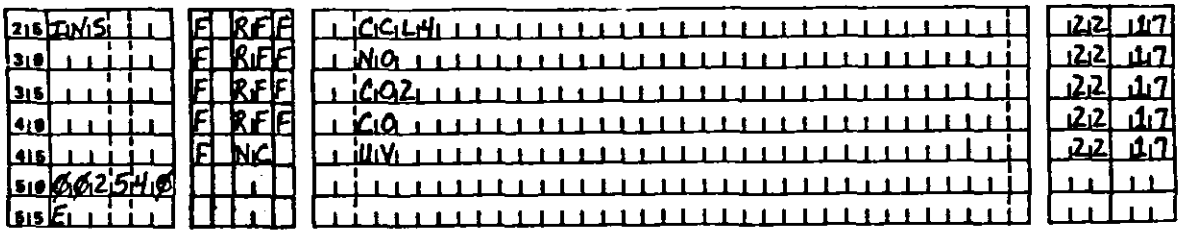
7. The Insert (INS) Special Instruction

Inclusions

The INS special instruction is used in the same manner as the "floating line". Its purpose is to place data on the proper page of a survey in those cases where data was inadvertently not coded or was later discovered to be relevant to an already coded situation. The INS special instruction may be used only to insert data after the previously coded lines of a particular Part II form.

Example:

To insert potential exposure to CCL4, NO, CO2, CO and UV after line 40 on page 25:



8. The Continuation Statement

Inclusions

Since certain information (such as a chemical name) may contain more than 32 characters it is necessary to provide for the proper encoding of such data.

The continuation statement consists of:

A. An asterisk in column 69, indicating that the information on that line is continued on the following line.

B. A "C" in column 24 of the line following the asterisk, indicating a continuation of the data on the previous line.

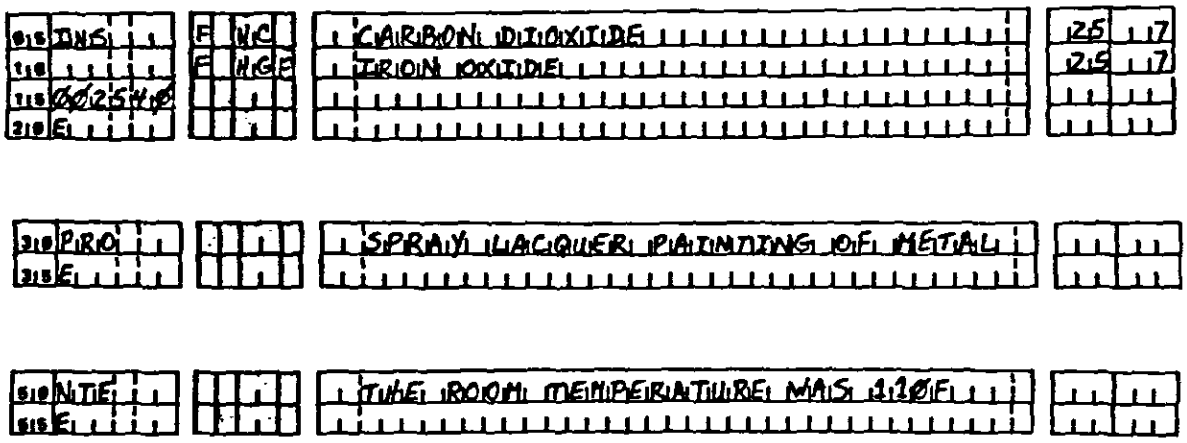
Example:

9. The End Statement (E)

Inclusions

It is necessary to provide a special instruction which will terminate certain special instruction sets, so that data are handled in accordance with surveyor observations. Thus, INS, PRO, and NTE statements must be ended with an "E" in column 24 following the set of related information.

Examples:



Exclusions

The copy (CPY) statement is self-ending.

Special Comments

This section contains further examples of proper PART II encoding format for both routine and special situations, as well as instructions relating to overall survey procedures.

A. General

1. Strive for consistency and legibility in character formation to facilitate keypunching and minimize errors.

2. Erasures must be complete--no single-line strikeouts, no writeovers. Do a complete blackout and go to next line or page.

B. Control Data

1. Zero-Fill - The computer program will zero-fill leading blanks on elements for data, page number, line number start/stop CPY reference lines, insert reference line, total number of employees, and number of females. The computer program does not zero-fill leading blanks on TRN, MFG, DST Suffix (identifiers or sequential) numbers.

2. Facility ID - The ID number is on the sample facilities list provided to surveyors in the field. The number must be duplicated in its entirety on each form.

3. Facility Surveyed by Multiple Surveyors -

   a. Each surveyor records his/her ID on that portion of the survey work he/she completes.

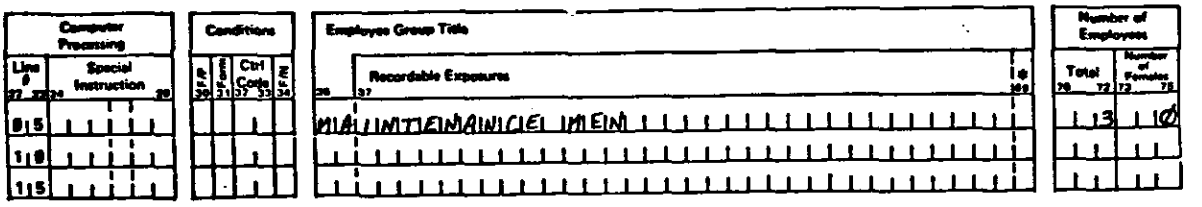
   b. The date is the day the survey started, and does not change if the survey takes several days.

   c. Each surveyor uses a separate, defined block of numbers for pages, MFG, DST, TRN.

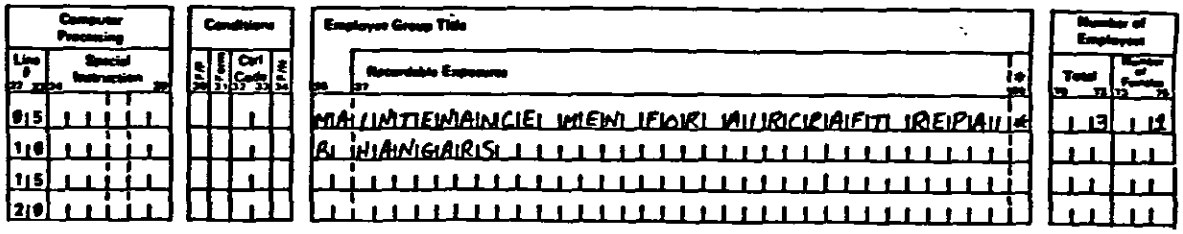
   d. Each surveyor completes an individual Part III form for his/her time.

C. Occupational Titles

1. The first record on the first page of any facility survey must be an occupational group title, (which is free text) except if a trade secret designation is being used. An example is:

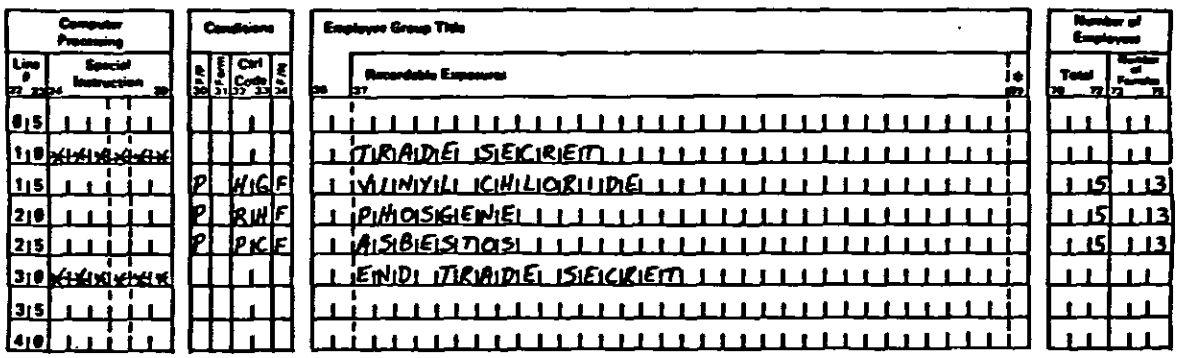


2. If any occupational title must be continued, the number of people is always on the first line, and the format is:



D. Trade Secret Data

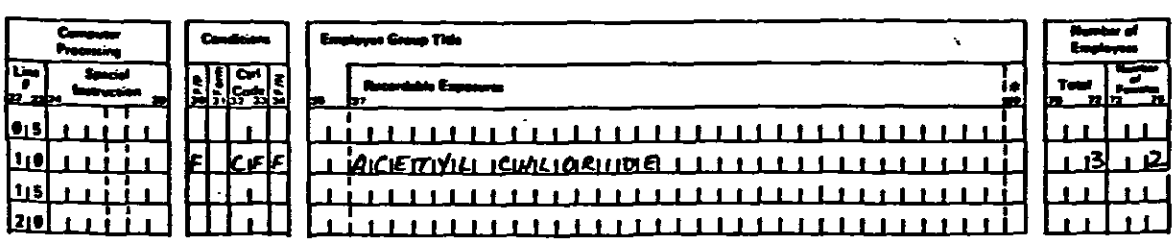
3. "Trade secret start" and "trade secret end" encompasses only that data which are trade secret. Trade secret designation for a block of data is also shown as:



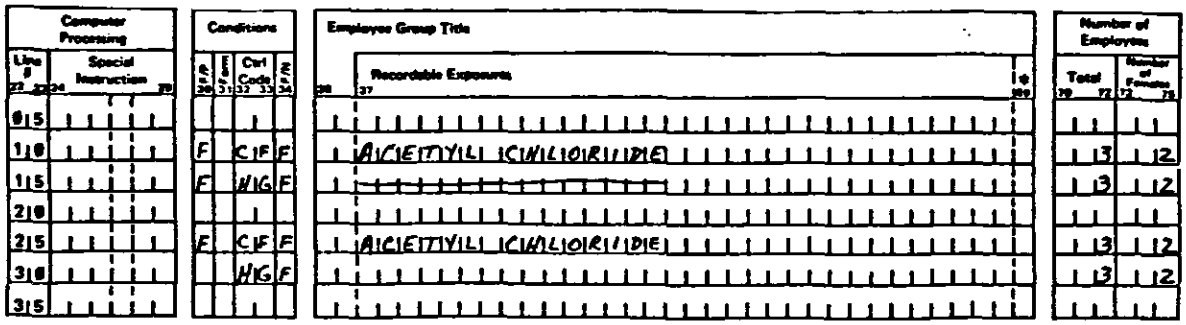
Note: Only trade secret information should be entered on the pages(s) containing classified data designated by the facility management. Any data within the trade secret statement may not be copied or recalled - this means that no suffix numbers for MFG, DST, or TRN are permitted within a trade secret designation. Additionally, no special instructions such as CPY or INS are permitted within a trade secret set.

E. Coding Potential Exposure Agents

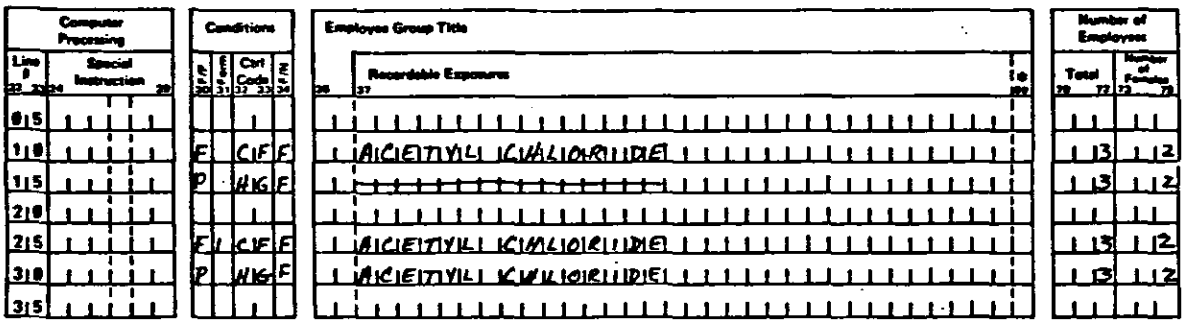
1. A single-line agent, one control and one duration, is shown as:



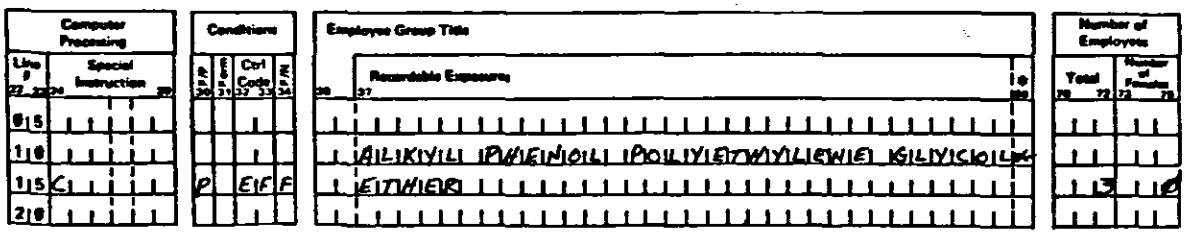
2. A single-line agent, multiple control and single duration, can be coded in either format that follows:



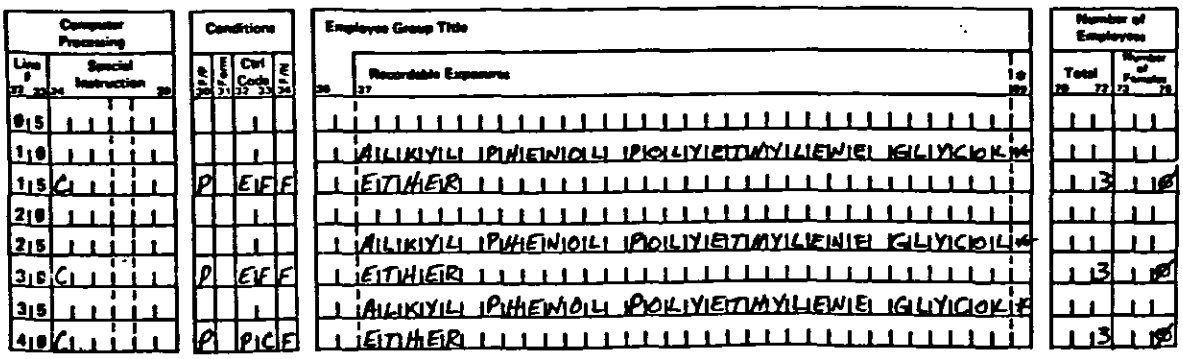
3. A single-line agent, multiple control and multiple duration, is coded as shown in either example below. A single horizontal line in columns 37-68 indicates a repeat of the preceding line. Do not start a page with this notation, as there is no preceding line on that page. (Data entry operators do not necessarily see the survey forms in page-sequential order.)



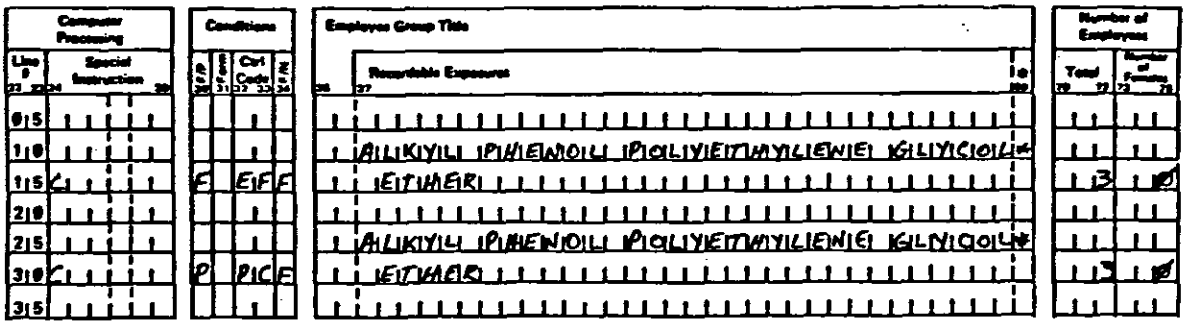
4. A multiple-line agent, single control and single duration, is shown as:



5. A multiple-line agent, multiple control and single duration, can be shown in either format illustrated:



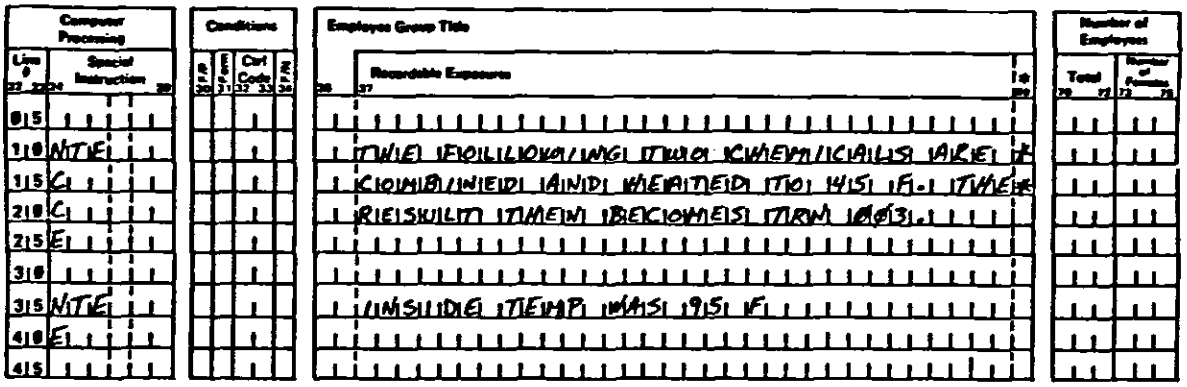
6. A multiple-line agent, multiple control and multiple duration, would be shown as:



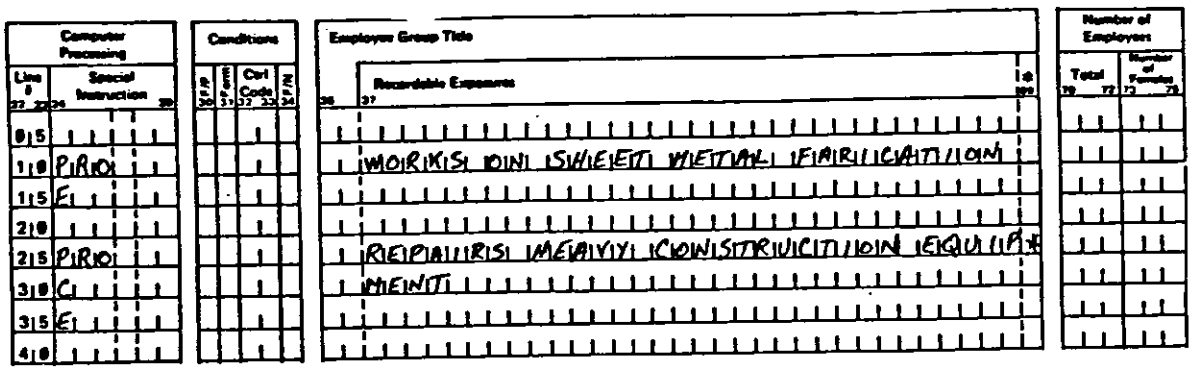
Note: The number of employees to which the conditions apply is on the same line as the conditions data and the "C" statement. Also note the space at the beginning of the second line to reflect the space between portions of the chemical name.

F. Special Instructions Set

1. A Note (NTE) statement is free text. The NTE statement may occur anywhere on the survey form except within a TRN, PRO, or CPY set. It may be contained in an insert (INS) set. The text is not edited. Remember to close with an end (E) statement. You may refer to a defined TRN in a NTE statement. The only special instruction allowed between NTE and E is a continue (C) statement. The structure is:

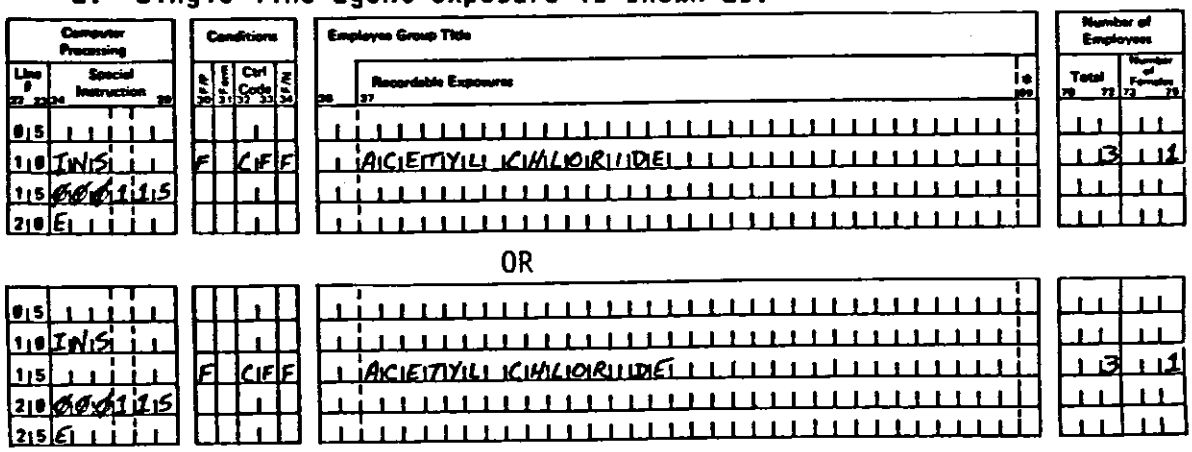


2. A Process (PRO) statement is free-form text. The PRO statement may be used anywhere on the survey form except within a TRN, NTE, or CPY set. It may be used within an insert (INS) statement. The text is not edited. Remember to close with an E. A tradename cannot be defined in a PRO statement, it can only be referred to. The only special instruction allowed between PRO and E is a continue (C) statement. A PRO statement example is:

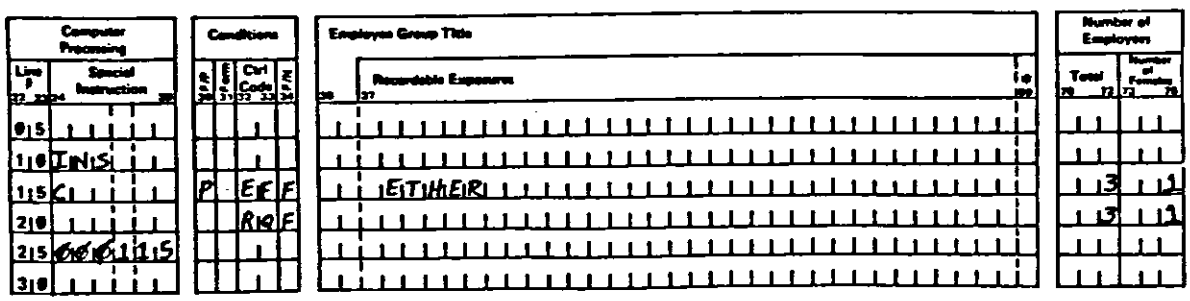


3. The Insert (INS) statement structure for:

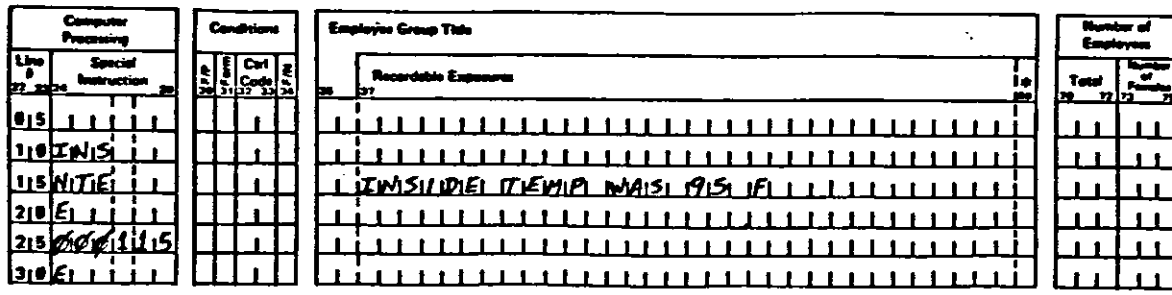
a. Single-line agent exposure is shown as:



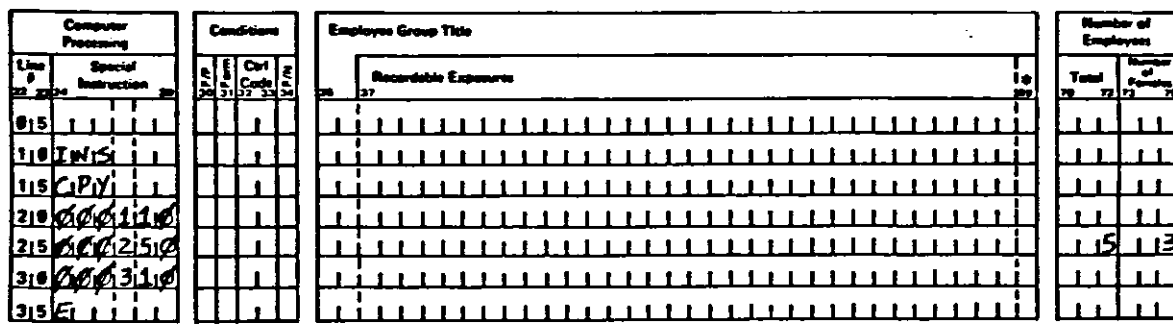
b. Inserting a partial structure. The data inserted does not need to be a complete set. It can be used to correct an omission as shown:



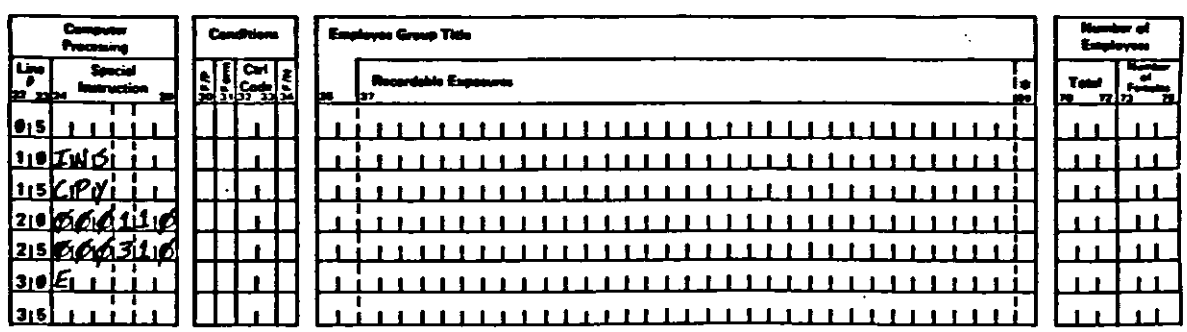
c. Inserting a NTE statement requires an E to end the NTE statement, and the necessary E to end the INS statement as illustrated:



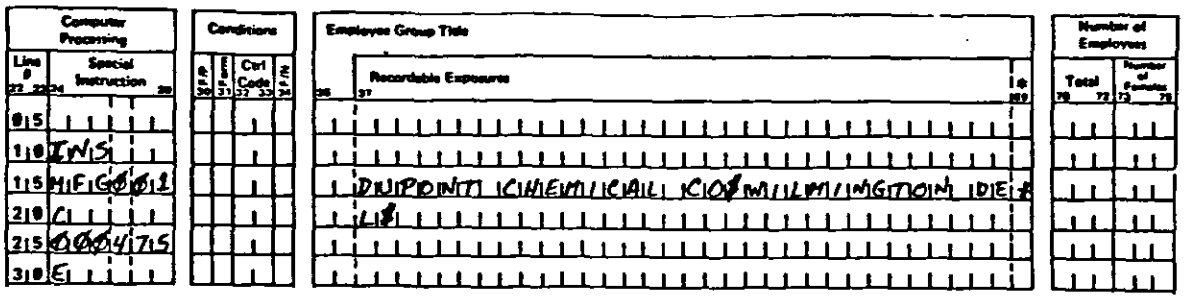
d. Inserting a copy statement, as shown below requires a copy start, copy stop, insert point, and E. The instruction reads, "copy data from page 1, line 10 through page 2, line 50, and insert it following page 3, line 10", (applying to 5 people, 3 of whom are female).



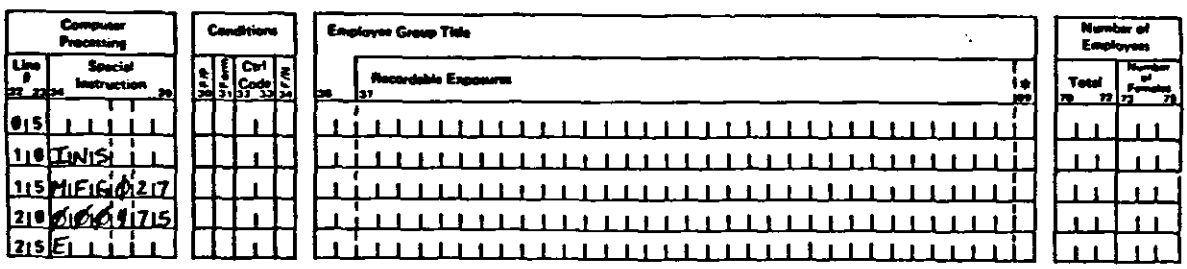
e. Inserting a partial copy allows for correction of the first two lines of the previous example if these data had been forgotten during initial coding of a copy statement. The insert would be encoded as:



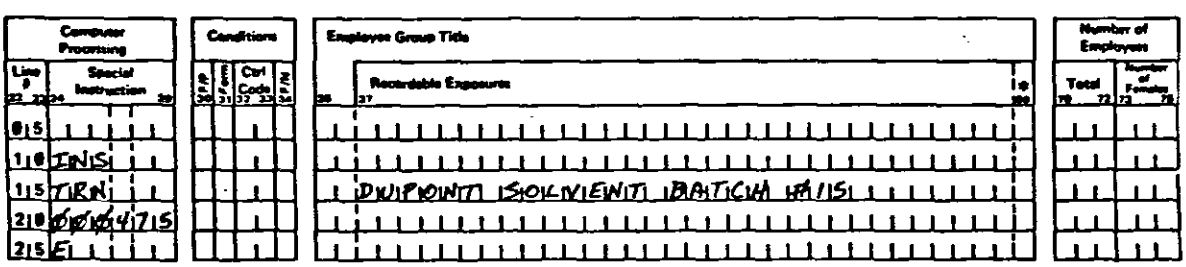
f. Insert a partial TRN set. Insert the MFG of a TRN set as follows:



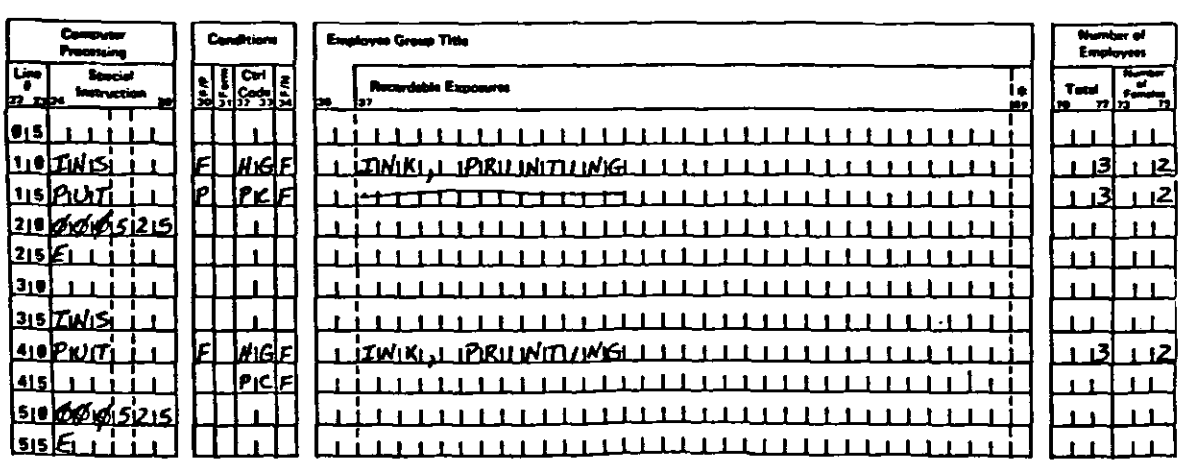
g. Insert a recalled or previously defined MFG. Message reads "insert MFG027 following line 75, page 4, END." Shown as:



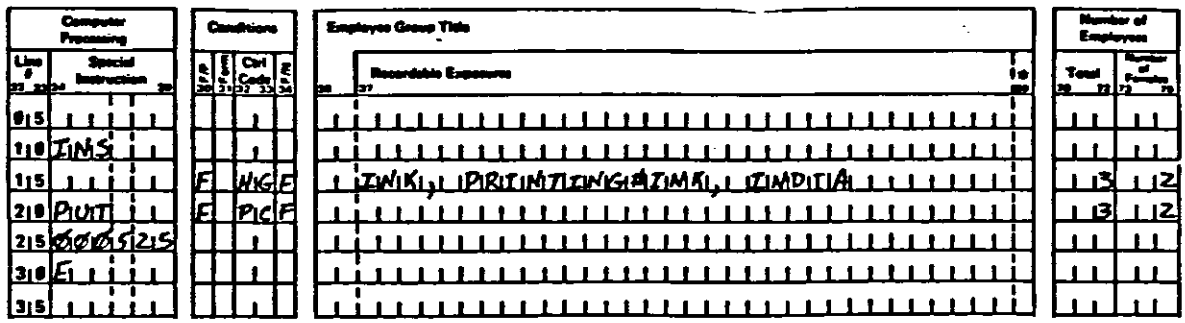
h. Insert a TRN definition. Message reads, "insert TRN Dupont Solvent Batch #15 following line 75, page 4." Note: This defined TRN cannot be referenced or recalled unless the original TRN special instruction includes the necessary 3-digit code number. The encoding would be:



i. Inserting a multiple control "PUT" code, shown as:



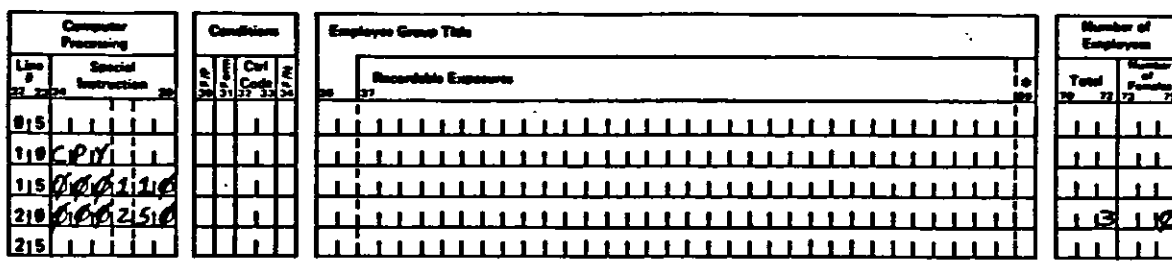
A PUT insert with an example of a "candidate" PUT term suggestion is shown as:



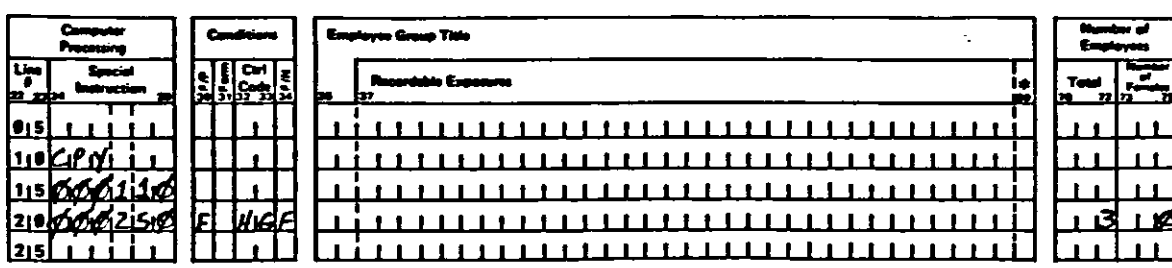
Note: You may not insert an INS statement. You may not insert an occupational title - if you forget an occupational title use the floating line numbers or re-copy the page. (Occupational code is a key element in programming.)

4. Copy statements

a. To copy previously coded data, without change - the message reads, "copy from line 10, page 1 through and including line 50, page 2," is encoded:

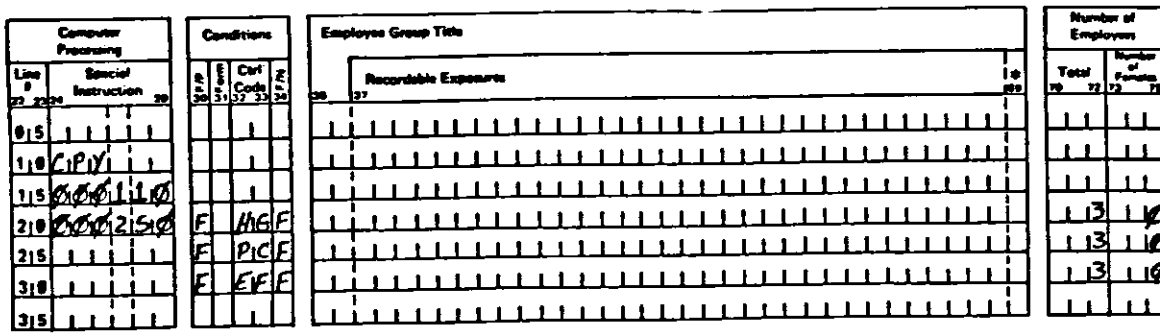


b. To copy previously coded data with overriding conditions - the message reading, "copy from line 10, page 1 through and including line 50, page 2," is illustrated as:



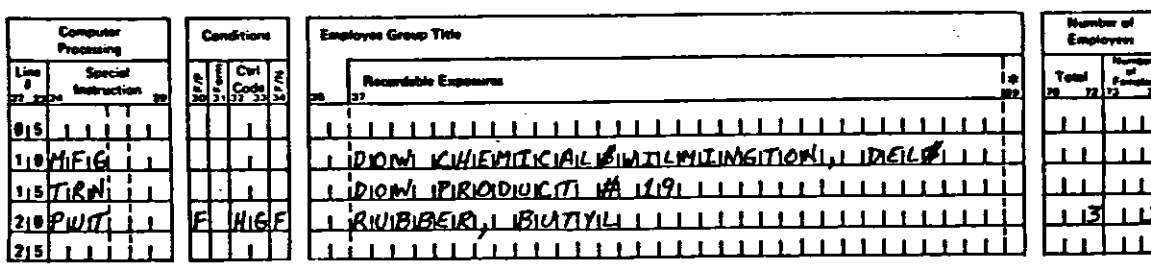
Note: Overrides must be fully coded for all conditions. If a special instruction set falls within the range of the copy statement, the statement set being copied must be complete. Any inserted data falling within the copy range will be copied. You may not copy an occupational title.

c. To copy previously coded data with multiple overriding conditions - the message reading, "copy from line 10, page 1 through and including line 50, page 2, and apply all listed exposure conditions to each agent cited for the number of people cited," is shown:

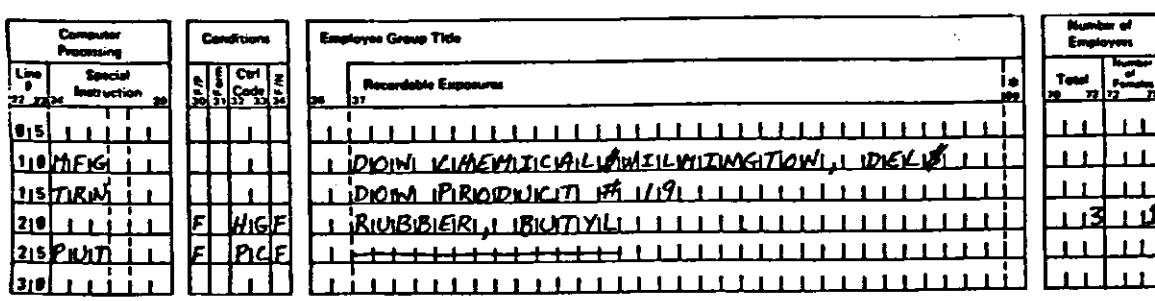


5. MFG or DST Sets

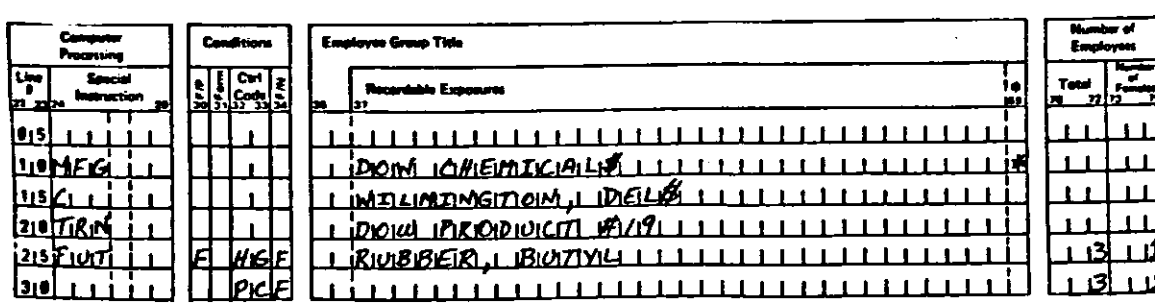
a. Single condition exposure to a single agent:



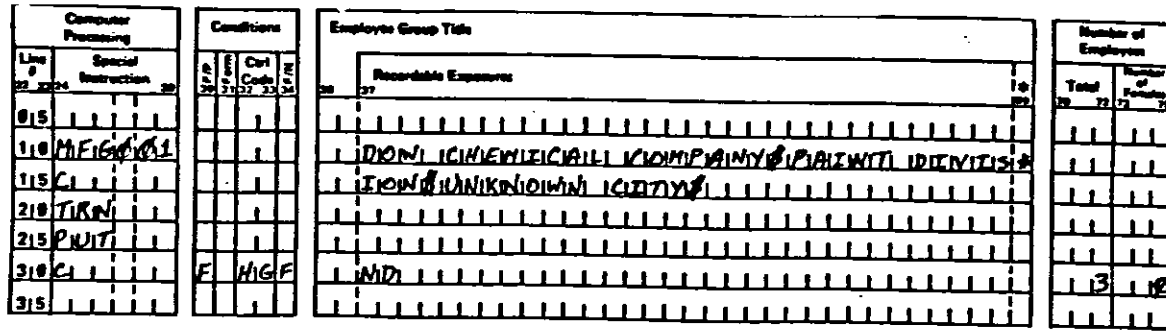
b. Multiple condition exposure to a single agent:



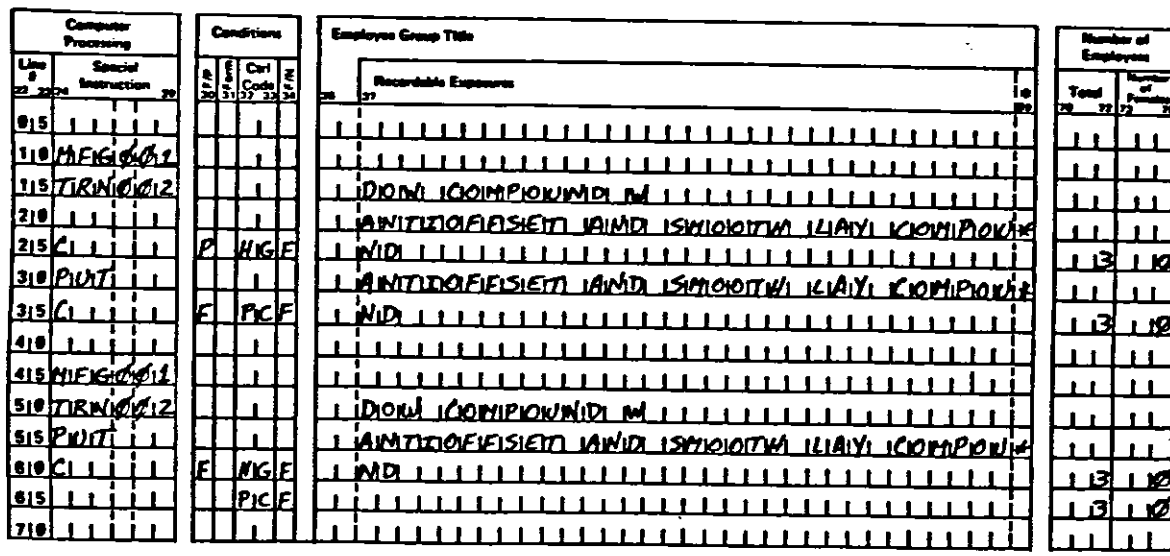
c. Alternative format for multiple condition exposure to a single agent:



d. Multi-line MFG, TRN definition, and multi-line PUT Term, single condition of exposure:

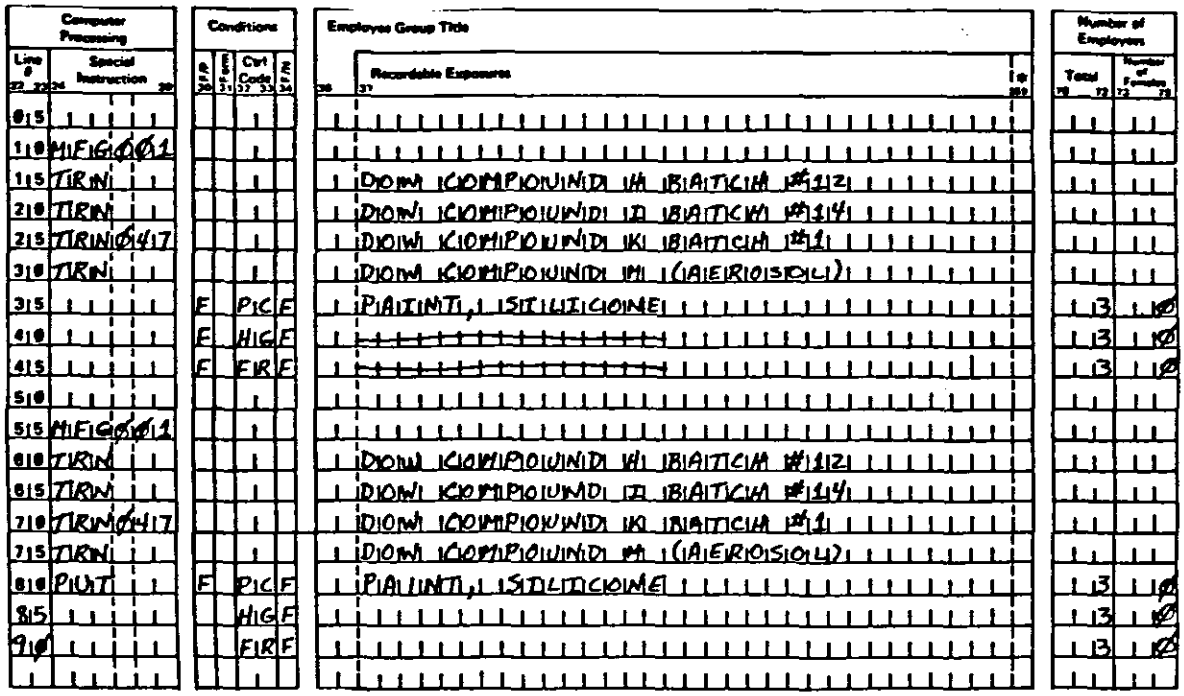


e. Recalled or referenced MFG, defined TRN, nested double line PUT and conditions, and concluding double line PUT showing two exposure conditions is shown as:



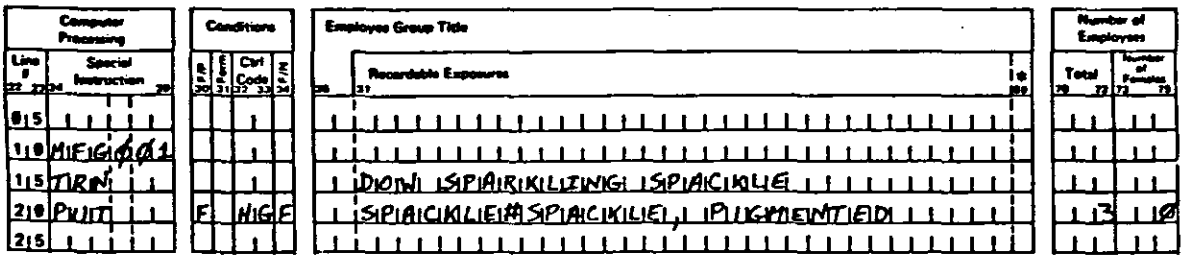
Note: These two examples convey the same information in alternate formats.

f. Two alternative ways of saying that four products made by the referenced manufacturer, with the same product use, are recordable exposures under three separate sets of conditions. This is a Shortcut Tradename Set and is illustrated as:



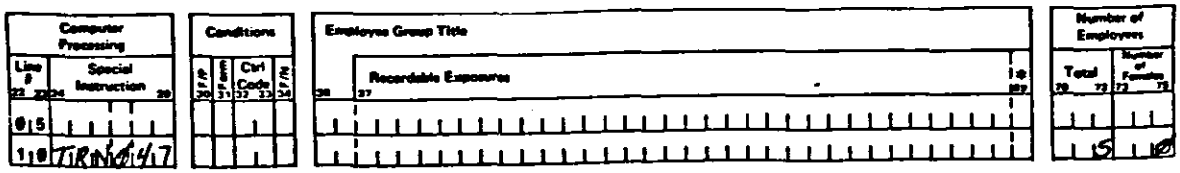
Note: One TRN is numbered for recall purposes.

g. Single condition exposure to a product, containing a suggested addition ("candidate term") to the PUT list is encoded:



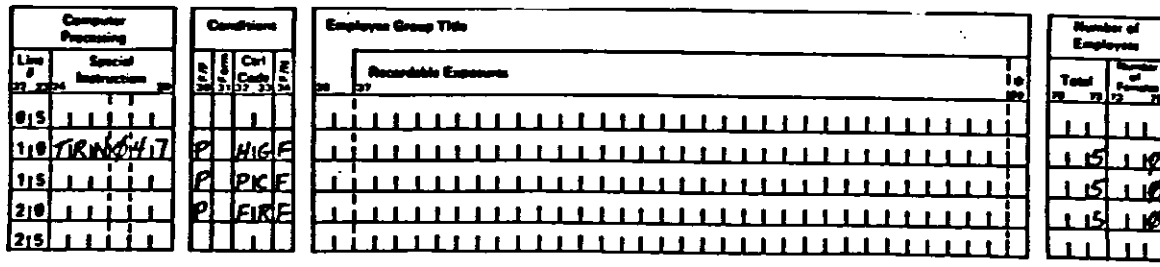
Note: The first term on the PUT line is the original PUT term which is as close to the desired term as possible, and the second is the suggested addition or "candidate".

h. A recalled TRN with no overriding conditions of exposure would appear as:



Note: You can leave conditions blank if no condition overrides are desired, but never leave the number of employees columns blank.

i. A recalled TRN with multiple condition overrides is:



Note: Any condition line (even if inferred) must contain a number for people exposed.

FIGURE 3. Part III-Surveyor Assessment

NATIONAL OCCUPATIONAL HAZARD SURVEY II

PART III – Surveyor Assessment

1. Revision Code — 0 1 0 (1; 2–4)
2. Surveyor I.D. — _ (5)
3. Date Survey Started — __/__/__ (MO./DAY/YR.) (6, 8, 10)
4. Facility ID Code — ______ (12–17)
5. Disposition of Survey (18)
   1. Completed
   2. Partially completed
   3. Refused to be surveyed
   4. Could not be located
   5. Out of business
   6. Temporarily closed
6. Was this facility drawn from the "replacement facility pool?" (19)
   1. Yes
   2. No
7. Number of Part II forms completed as a result of this survey?

   ____ forms (20–23)
8. Number of Part II data lines recorded?

   ____ (24–28)
9. How much time, in hours and minutes, was spent on each of the following activities?

	HOURS	MINUTES
Travel to and from facility	___ (29–31)	__ (32)
Conduct of survey	___ (34–36)	__ (37)
Waiting and discussions	___ (39–41)	__ (42)
Completion of survey forms	___ (44–46)	__ (47)

FIGURE 3. Part III-Surveyor Assessment (Cont.)

10. Did plant management personnel prohibit you from surveying any areas of the facility?$_{60}$

    1 Yes
    2 No

11. Did plant management personnel designate any areas or processes within this facility as "trade secret?"$_{61}$

    1 Yes
    2 No

12. Were you accompanied by someone from the facility when you performed the survey?$_{62}$

    1 Yes, by employer representatives
    2 Yes, by employee representatives
    3 Yes, by representatives of both the employer and the employees
    4 No

D. Part III Survey Form Preparation

The Part III (Surveyor Assessment) form (shown as Figure 3) is used by the surveyor to record various information regarding the conduct of each facility survey. The data recorded on the Part III form provides the administrative data necessary for proper scheduling of the survey, and the assignment of reasonable work loads for the surveyors.

Discussion of twelve (12) items on the Part III form, and the proper procedure for completing the form follows:

Items:

	9 (1)
1. Revision Code	0 1 0 (2–4)
2. Surveyor I.D.	— (5)
3. Date Survey Started	— — (6–7) / — — (8–9) / — — (10–11) (MO./DAY/YR.)
4. Facility ID Code	— — — — — — (12–17)

Intent

To provide a link between all the survey forms completed during the course of a facility survey.

Inclusions

Items #1 through #4 must contain data entries.

Procedure

As previously discussed for these identification codes.

Exclusions

Not applicable.

Item:

5. Disposition of Survey$_{18}$

   1 Completed
   2 Partially completed
   3 Refused to be surveyed
   4 Could not be located
   5 Out of business
   6 Temporarily closed

Intent

To record the disposition of the survey, and to notify survey headquarters if a repeat visit to a selected facility must be scheduled.

Inclusions

One of the code responses must be circled.

Procedure

Select the code response most accurately reflecting final disposition of the survey, by circling the appropriate number.

Exclusions

Not applicable.

Item:

6. Was this facility drawn from the "replacement facility pool?"$_{19}$

1 Yes
2 No

Intent

To record the origin of the facility selection as a verification of the NOES sampling mechanism.

Inclusion

Either code response "1" or"2" must be circled.

Procedure

Depending on the sample frame origin of the facility selected, circle the appropriate code response.

Exclusions

Not applicable.

Item:

7. Number of Part II forms completed as a result of this survey?

$\frac{\quad}{10}\frac{\quad}{1}$ forms

Intent

To serve as a check on the number of Part II forms completed for this survey. This is necessary to assure reception and edit of all file data.

Inclusions

This item must contain the coded number of Part II forms completed.

Procedure

Encode the number of Part II forms completed in the space provided. The number must be right-justified.

Exclusions

No entry is made unless the code response to Item #5 was "1" or "2".

Item:

8. Number of Part II data lines recorded?

$\overline{26}$ - - - $\overline{28}$

Intent

For administrative use in analyzing surveyor workload by industry type and size.

Inclusions

This item must contain a numerical estimate of the number of Part II data lines.

Procedure

Estimate the Part II data lines by multiplying the number of Part II pages completed times 16 (the number of pre-printed line numbers on a Part II form).

Exclusions

If the coded response to Item #5 was, 3, 4, 5, or 6, no data is recorded.

Item:

9. How much time, in hours and minutes, was spent on each of the following activities?

	HOURS	MINUTES
Travel to and from facility	___ (29–31)	__ (32–33)
Conduct of survey	___ (34–36)	__ (37–38)
Waiting and discussions	___ (39–41)	__ (42–43)
Completion of survey forms	___ (44–46)	__ (47–48)

Intent

To provide the data necessary for administrative analyses of surveyor time allocation in four major areas.

Inclusions

Record elapsed time in hours and minutes for travel, conduct of survey, and completion of forms for all surveys resulting in a coded "1" or "2" response to Item #5. Waiting and discussion times should be entered depending on individual survey conditions, regardless of the coded response on Item #5.

Exclusions

Not applicable.

Item:

10. Did plant management personnel prohibit you from surveying any areas of the facility?

1 Yes
2 No

Intent

To determine if the incoming data reflects surveyor observations for the entire facility.

Inclusions

The appropriate code response must be circled for all facilities where survey work was accomplished (a "1" or "2" response to Item #5).

Exclusions

No data is entered for facilities not encoded "1" or "2" on Item #5.

Item:

11. Did plant management personnel designate any areas or processes within this facility as "trade secret?"
    1 Yes
    2 No

Intent

To alert survey headquarters personnel that the Part II forms contain trade secret data so that the appropriate security measures can be taken.

Inclusions

Encode "1" or "2" for all surveys which resulted in a "1" or "2" response on Item #5.

Exclusions

No data is recorded for those visits not covered under Inclusions.

Item:

12. **Were you accompanied by someone from the facility when you performed the survey?**$_{31}$

1 **Yes, by employer representatives**
2 **Yes, by employee representatives**
3 **Yes, by representatives of both the employer and the employees**
4 **No**

Intent

To provide data from analyses of employer/employee response to survey procedures.

Inclusions

Encode the appropriate response for all surveys resulting in a "1" or "2" response to Item #5.

Exclusions

No data is encoded for facilities where no actual survey was completed.

Part II Coding - Example Industrial Situations

As a reference guide for the surveyor, each example situation is fully explained in narrative form followed by the proper NOES encoding protocol in the referenced figure. This type of exercise was used extensively in surveyor training.

Examples:

A. Construction Site

A construction site is being surveyed. During the walk-through, 3 male and 2 female painters are observed applying a primer coat to the underside of the galvanized roof. This large warehouse is 90% complete, totally enclosed, with no mechanical ventilation. The overspray covers the painters. Upon interview, the primer is found to be shipped in two containers until immediate application. "Red Ball Galvanized Epoxy Primer FG-1176" is mixed with "Red Ball Catalyst Reducer FG-1177". Additional label information is too general to be of use (listed as ketones, alcohols, etc.) except that the catalyst (FG-1177) contains 3% Phosphoric acid. Red Ball is a distributor located in Wilmington, Delaware 25111.

The painters are wearing long sleeved shirts, eye protection, and particulate, quarter-face filtration-type respirators.

Proper encoding of this example is shown in Figure 4.

B. Manufacturing

During the survey of a formica plant we find a 200' x 100' x 30' (height) room which contains the process equipment and chemicals for manufacturing 4' x 8' formica sheets. We see a 4' diameter x 4' side roll of heavy paper being fed through a series of rollers into a bath of formaldehyde, phenol, and methanol. Isopropyl alcohol is sprayed along the edges of the paper to prevent the resin mixture from leeching out of the paper, The resin-treated continuous sheet is then passed through 100' of interconnected ovens for curing. The paper emerges from the ovens and continues through a series of rollers directly below a 5' x 5' canopy hood. The "dried" resin-coated paper then passes into a cutter machine which cuts and stacks the 4' x 8' sheets for further processing.

There are two men operating this process; 1, the "paper feeder operator" and 2, the "cutter operator". The men exchange jobs at midday.

The ovens are fitted with local ventilation, although leaks within the system are apparent. A 5' x 5' canopy hood is directly overhead of the paper as the paper exits the ovens. Deposits of phenol crystals and a "dark residue" are observed near or on various parts of the equipment. Formaldehyde and isopropanol are detectable by smell throughout the room. The area is uncomfortably hot and normal speech is impossible due to the constant noise generated by the rollers.

Neither of the two men are wearing any sort of personal protective equipment.

Proper encoding of this example is shown as Figure 5.

FIGURE 4.

Card Code	Revision Code	Surveyor I.D.	Data Survey Started (MM DD YY)	Facility Number	Page Number
8	0 1 0	I	1 1 Ø 9 8 Ø	2ØØØØØ	1

Line #	Special Instruction	Conditions (30)	Conditions (31)	Ctrl Code	Conditions (34)	Employee Group Title / Recordable Exposures	*	Total	Number of Females
05						PAINTERS		5	2
10	PRO					PRIMER PAINTING GALVANIZED CEILI	*		
15	C					ING			
20	E								
25	DISTØØ1					RED BALL WILMINGTON, DELAWARE 25	*		
30	C					1/1/1			
35	TRNØØ1					RED BALL GALVANIZED EPOXY PRIMER	*		
40	C					FG-1/1/76			
45	PUT	P		FQ	F	PRIMER		15	12
50				EF				15	12
55				PC				15	12
60	DISTØØ1								
65	TRNØØ2					RED BALL CATALYST REDUCER FG-1/1/7	*		
70	C					7			
75	PUT	P		PC	F	REDUCING AGENT		5	12
80				EF				15	12
85				FQ	F			15	12

FIGURE 4. (Cont.)

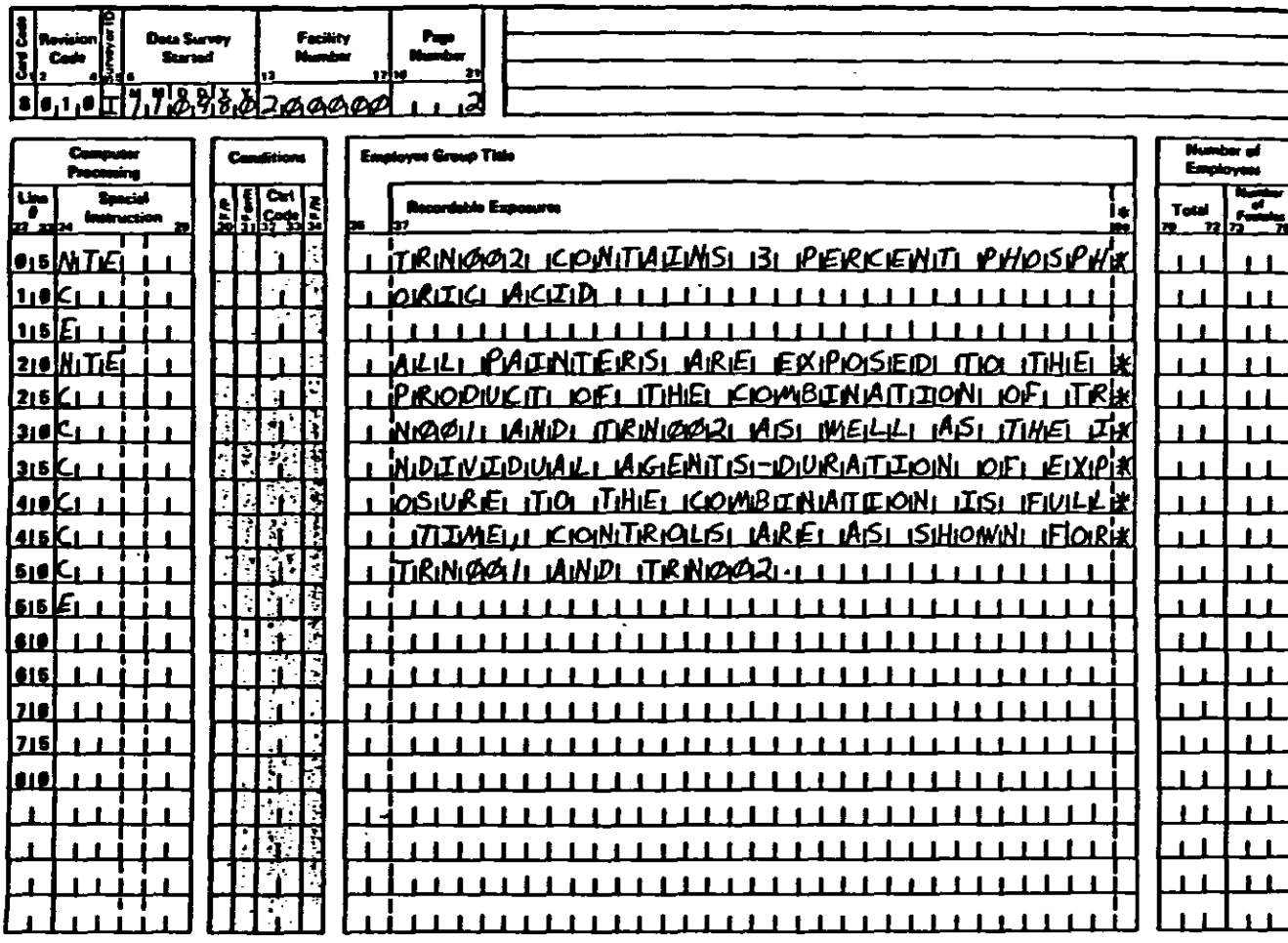
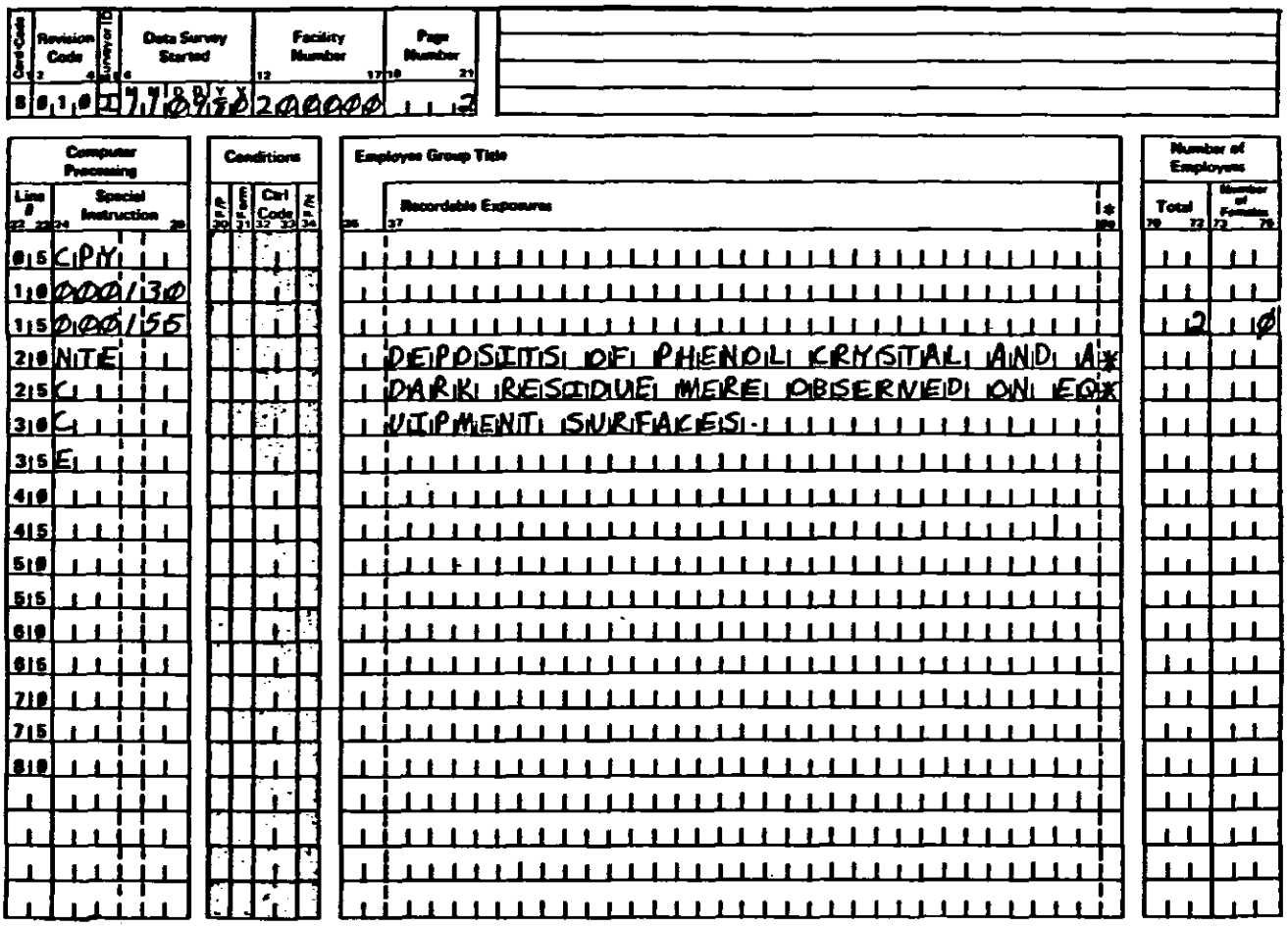


FIGURE 5.

Card Code	Revision Code	Survey ID	Data Survey Started (MM DD YY)	Facility Number	Page Number
0	010	I	770980	200000	1

Computer Processing: Line #	Special Instruction	Conditions: 30	31	Cntl Code	34	Employee Group Title / Recordable Exposures	*	Number of Employees: Total	Number of Females
015						PAPER FEEDER OPERATOR		2	0
110	PRO					ROLLER-FEEDS 4-FOOT BY 4-FOOT RO	*		
115	C					LLS OF HEAVY PAPER INTO CHEMICAL	*		
210	C					BATHS			
215	E								
310		P		LIV	F	FORMALDEHYDE		2	0
315		P		LIV	F	PHENOL		2	0
410		P		LIV	F	METHANOL		2	0
415		P		LIV	F	ISOPROPANOL		2	0
510		P		NC		CONTINUOUS NOISE		2	0
515		P		NC		ELEVATED TEMPERATURE		2	0
610						CUTTER OPERATOR		2	0
615	PRO					OPERATES PAPER CUTTING EQUIPMENT			
710	E								
715	NTE					THE PAPER IS CUT AND STACKED BY	*		
810	C					MACHINE AFTER IT EMERGES FROM CU	*		
85	C					RING OVENS			
90	E								

FIGURE 5. (Cont.)



C. Technical Laboratory

The Fire Technology and Flammability Company is involved in testing various fiberglass insulations which are subject to certain American Society for Testing and Materials (ASTM) standards. Tests involve the burning of these materials to measure certain properties such as flame spread and smoke density. The majority of the work in the section is performed in 3 rooms and involves 5 employees.

One room in the section contains the Steiner Flame Spread Tunnel which is fueled by natural gas and is used to test various building materials to determine the flame spread index and smoke density. The test specifications require the room to be temperature and humidity controlled. To conduct the tests, samples of the material are mounted with an adhesive onto asbestos boards which support the material while testing. The specimen size is 21 inches by 25 feet. The asbestos boards are placed in the tunnel by the 2 full-time male operators. No personal protective devices are observed. The system is then closed and the tunnel prepared for operation. Testing time varies with the material but usually requires approximately 1 hour. During the tests, the tunnel is completely enclosed and vented to the outside of the building. After the test is complete, the tunnel is cooled down before it can be cleaned and the next specimen loaded. To clean the tunnel, the top is lifted, the asbestos boards are removed and then the burnt material is cleaned out of the tunnel using brushes. This procedure requires 10 minutes. Approximately 5 samples can be tested during an 8-hour shift. Fiberglass samples are stored in the area prior to testing and residue of the fiberglass material is noted on equipment surfaces.

The samples for the Steiner Flame Spread Tunnel are prepared in the Adhesive room by 2 full-time (1 male and 1 female) employees, who have no other duties. As noted previously, the material to be tested is glued onto asbestos boards. The asbestos boards arrive at U.S. Testing precut to the appropriate size for use in the tunnel. The boards are covered with varying amounts of dust as a result of the supplier cutting the boards into the designated size. In preparing the samples, the adhesive is first applied to the board. The adhesive used (a synthetic resin) is AK-47 from Glues, Inc., 30 Steel Way, Newark, N.J. 10075. No general or local ventilation is present in the room. The employees wear gloves and a half-face combination particulate filter and chemical cartridge respirator while preparing samples. However, street clothing is worn, and the male worker has a full beard.

The third room, operated by 1 male employee, contains two (2) Radiant Panel Testers consisting of closed containers generating combustion temperatures by using electric coils. The Radiant Panel Testers are provided with local ventilation. A large wall fan is also located inside the enclosure which is used to remove smoke or fumes from the enclosure when a test is completed. Cleanup is again performed after each 10 minute test. Test sample insertion, removal, and equipment cleanup is performed in the same manner as in the Steiner Flame Tunnel Operation.

No personal protective equipment was observed in use in the radiant panel room.

Proper encoding of this example is shown as Figure 6.

FIGURE 6.

Card Code	Revision Code	Surveyor ID	Data Survey Started	Facility Number	Page Number
8	010	I	7 7 Ø 7 8 2 (MM DD YY)	2ØØØØØ	1

Line #	Special Instruction	P/R	Erm	Ctrl Code	F/N	Employee Group Title / Recordable Exposures	*	Total	Number of Females
015						STEINER FLAME TUNNEL OPERATORS		2	Ø
110	PRO					TESTING FIBERGLASS SAMPLES TO CO	*		
115	C					MBUSTION FOR FLAME SPREAD AND SM	*		
210	C					OKE DENSITY AND CLEANING TUNNEL			
215	E								
310		P		LV	F	PC-NATURAL GAS		2	Ø
315		P		LV	F	PC-FIBERGLASS		2	Ø
410		P		NC		FIBERGLASS		2	Ø
415	NTE					FIBERGLASS AND BURNT RESIDUE DEP	*		
510	C					OSITS NOTED ON AREA SURFACES. THE	*		
515	C					FIBERGLASS BEING TESTED IS 4 INC	*		
610	C					HES THICK SPUNGLASS BLANKETS.			
615	E								
710		P		LV	F	ASBESTOS		2	Ø
715	MFG					GLUES, INC. $3Ø STEEL WAY$NEWARK, N	*		
810	C					.J. 1ØØ75			

FIGURE 6. (Cont.)

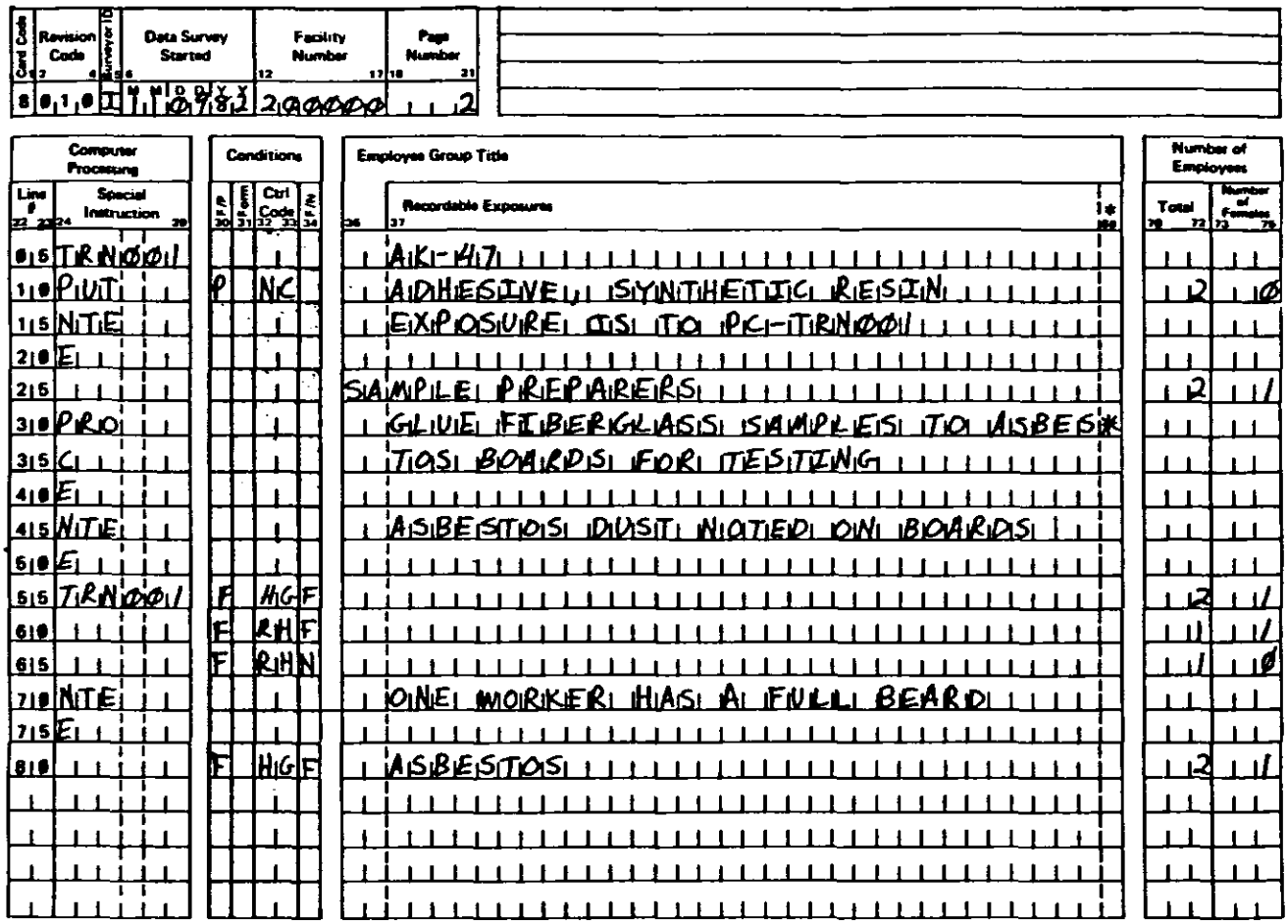
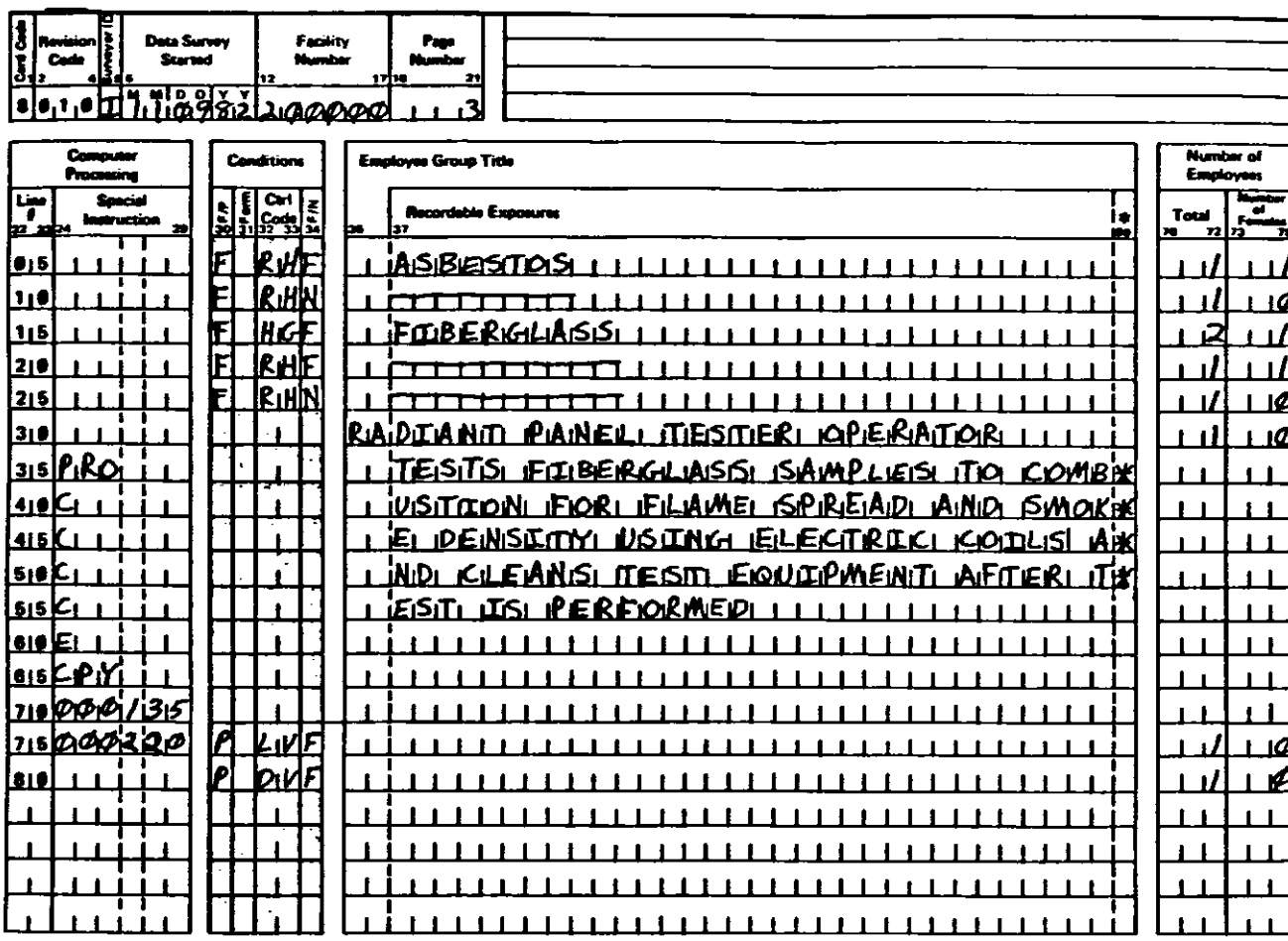


FIGURE 6 (Cont.)



OMB #0920-0085

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control
National Institute for
Occupational Safety & Health
Robert A. Taft Laboratories
4676 Columbia Parkway
Cincinnati OH 45226

Your facility has been selected, along with more than 5,000 other business establishments of all sizes and types across the nation, to be included in the National Occupational Exposure Survey (NOES) being conducted by the National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control, U. S. Public Health Service, Department of Health and Human Services.

As you may know, this survey, which is authorized by the Occupational Safety and Health Act of 1970, [see 29 U.S.C. 669(a)], is a special research project designed to obtain basic information about health and safety practices within workplaces, and also to determine the exposure of workers to chemical, physical, and biological agents (or materials) which occur on a routine or frequent basis. The materials or agents to be considered include those known to be of a hazardous nature, as well as those which may not presently be considered hazardous. NIOSH regards voluntary cooperation to be essential to the effective conduct of this Survey, but reserves the right to exercise its general authority under Section 20(a) and (b) of Public Law 91-596 to enter facilities for purposes of conducting research. NIOSH is required by statute (29 U.S.C. 664) and Department regulation [45 CFR 5.71(c)] to protect the confidentiality of trade secrets. NIOSH retains survey data on individual plants under a serial number rather than plant name and subsequently destroys the link to plant name. No information on an individual plant would therefore be available for release.

The survey is a research effort and is not to be used for enforcement purposes. Instead, the compiled information will be used for various health and safety functions such as setting priorities for standards development and research activities, and for providing data to assist in determining the effectiveness of health and safety programs.

One of our specially trained surveyors will be visiting your facility sometime in the near future. He will request to meet with a key official so that a questionnaire can be completed. Following this, he will need to conduct a complete tour of all work areas to categorize and enumerate potential exposures to any chemical or physical agents. Although the time required will depend upon the nature of activities occurring in each establishment, the surveyor will attempt to complete the survey as rapidly as possible to minimize interference with normal workday routines.

NIOSH will be conducting its survey according to regulations set forth in 42 CFR, Part 85a. Thus, a representative of the employees' union (if any) will be permitted to be present during the NIOSH meeting with the company official and the plant tour if the representative so requests, and if NIOSH determines that this will aid the research investigation. Generally, NIOSH has found that participation by labor has aided its research investigation.

We would like to thank you in advance for your cooperation in this important health and safety endeavor.

Sincerely yours,

J. Donald Millar, M.D.
Assistant Surgeon General
Director

APPENDIX B. LIST OF IN-SCOPE FOUR-DIGIT SIC CODES AND NARRATIVE DESCRIPTIONS

AGRICULTURAL SERVICES (soil preparation, crop services, animal services, etc.)	
Crop preparation services for market, except cotton ginning	0723
Cotton ginning	0724
Veterinary services for animal specialities	0742
Lawn and garden services	0782
Ornamental shrub and tree services	0783
CRUDE PETROLEUM AND NATURAL GAS	
Crude petroleum and natural gas	1311
NATURAL GAS LIQUIDS	
Natural gas liquids	1321
OIL AND GAS FIELD SERVICES	
Drilling oil and gas wells	1381
Oil and gas field exploration services	1382
Oil and gas field services, nec*	1389
GENERAL BUILDING CONTRACTING (residential and nonresidential buildings, etc.)	
General contractors - single family homes	1521
General contractors - residential buildings, other than single family	1522
Operative builders	1531
General contractors - industrial buildings and warehouses	1541
General contractors - nonresidential buildings, other than industrial buildings and warehouses	1542
HEAVY CONSTRUCTION CONTRACTING (highways, bridges, sewer lines, etc.)	
Highway and street construction, except elevated highways	1611
Bridge, tunnel, and elevated highway construction	1622
Water, sewer, pipeline, communication and power line construction	1623
Heavy construction, nec	1629
SPECIAL TRADE CONTRACTING (plumbing, painting, electrical work, etc.)	
Plumbing, heating (except electric), and air conditioning	1711
Painting, paper hanging, and decorating	1721
Electrical work	1731
Masonry, stone setting, and other stone work	1741
Plastering, drywall, acoustical and insulation work	1742
Terrazzo, tile, marble and mosaic work	1743

* nec = not elsewhere classified

Appendix B. List of In-Scope Four-Digit SIC Codes and Narrative Descriptions (Cont.)

Carpentering	1751
Floor laying and other floor work, nec	1752
Roofing and sheet metal work	1761
Concrete work	1771
Water well drilling	1781
Structural steel erection	1791
Glass and glazing work	1793
Excavating and foundation work	1794
Wrecking and demolition work	1795
Installation or erection of building equipment, nec	1796
Special trade contractors, nec	1799

FOOD AND KINDRED PRODUCTS (meat, fruit, grain mill products, etc.)

Meat packing plants	2011
Sausages and other prepared meat products	2013
Poultry and egg processing	2017
Creamery butter	2021
Cheese, natural and processed	2022
Condensed and evaporated milk	2023
Ice cream and frozen desserts	2024
Fluid milk	2026
Canned specialties	2032
Canned fruits, vegetables, preserves, jams and jellies	2033
Dried and dehydrated fruits, vegetables, and soup mixes	2034
Pickled fruits and vegetables, vegetable sauces and seasonings, and salad dressings	2035
Frozen fruits, fruit juices and vegetables	2037
Frozen specialties	2038
Flour and other grain mill products	2041
Cereal breakfast foods	2043
Rice milling	2044
Blended and prepared flour	2045
Wet corn milling	2046
Dog, cat and other pet food	2047
Prepared feeds and feed ingredients for animals and fowls, nec	2048
Bread and other bakery products, except cookies and crackers	2051
Cookies and crackers	2052
Cane sugar, except refining only	2061
Cane sugar refining	2062
Beet sugar	2063
Candy and other confectionery products	2065
Chocolate and cocoa products	2066
Chewing gum	2067
Cottonseed oil mills	2074
Soybean oil mills	2075
Vegetable oil mills, except corn, cottonseed, and soybean	2076
Animal and marine fats and oils	2077
Shortening, table oils, margarine and other edible fats and oils, nec	2079

Malt beverages	2082
Malt	2083
Wines, brandy, and brandy spirits	2084
Distilled, rectified, and blended liquors	2085
Bottled and canned soft drinks and carbonated waters	2086
Flavoring extracts and flavoring syrups, nec	2087
Canned and cured fish and seafoods	2091
Fresh or frozen packaged fish and seafoods	2092
Roasted coffee	2095
Manufactured ice	2097
Macaroni, spaghetti, vermicelli, and noodles	2098
Food preparations, nec	2099

TOBACCO MANUFACTURING (cigarettes, cigars, etc.)

Cigarettes	2111
Cigars	2121
Tobacco (chewing and smoking) and snuff	2131
Tobacco stemming and redrying	2141

TEXTILE MILL PRODUCTS (weaving mills, knitting mills, yarn mills, carpets and rugs, etc.)

Broad woven fabric mills, cotton	2211
Broad woven fabric mills, man-made fiber and silk	2221
Broad woven fabric mills, wool (including dyeing and finishing)	2231
Narrow fabrics and other smallwares mills: cotton, wool, silk, and man-made fiber	2241
Women's full length and knee-length hosiery	2251
Hosiery, except women's full length and knee-length hosiery	2252
Knit outerwear mills	2253
Knit underwear mills	2254
Circular knit fabric mills	2257
Warp knit fabric mills	2258
Knitting mills, nec	2259
Finishers of broad woven fabrics of cotton	2261
Woven carpets and rugs	2271
Tufted carpets and rugs	2272
Carpets and rugs, nec	2279
Yarn spinning mills: cotton, man-made fibers and silk	2281
Yarn texturizing, throwing, twisting and winding mills, cotton, man-made fibers and silk	2282
Yarn mills, wool, including carpet and rug yarn	2283
Thread mills	2284
Felt goods, except woven felts and hats	2291
Lace goods	2292
Paddings and upholstery filling	2293
Processed waste and recovered fibers and flock	2294
Coated fabrics, not rubberized	2295
Tire cord and fabric	2296

Nonwoven fabrics	2297
Cordage and twine	2298
Textile goods, nec	2299

APPAREL AND OTHER TEXTILE PRODUCTS (men's, women's outerwear, and accessories, home furnishers, etc.)

Men's, youths', and boys' suits, coats and overcoats	2311
Men's, youths', and boys' shirts (except work shirts) and nightwear	2321
Men's, youths', and boys' underwear	2322
Men's, youths', and boys' neckwear	2323
Men's, youths', and boys' separate trousers	2327
Men's, youths', and boys' work clothing	2328
Men's, youths', and boys' clothing, nec	2329
Women's, misses', and juniors' blouses, waists, and shirts	2331
Women's, misses', and juniors' dresses	2335
Women's, misses', and juniors' suits, skirts, and coats	2337
Women's, misses', and juniors' outerwear, nec	2339
Women's, misses', children's and infants' underwear and nightwear	2341
Brassieres, girdles, and allied garments	2342
Millinery	2351
Hats and caps, except millinery	2352
Girls', children's, and infants' dresses, blouses, waists, and shirts	2361
Girls', children's, and infants' coats and suits	2363
Girls', children's, and infants' outerwear, nec	2369
Fur goods	2371
Dress and work gloves, except knit and all leather	2381
Robes and dressing gowns	2384
Raincoats and other waterproof outer garments	2385
Leather and sheep lined clothing	2386
Apparel belts	2387
Apparel and accessories, nec	2389
Curtains and draperies	2391
House furnishings, except curtains and draperies	2392
Textile bags	2393
Canvas and related products	2394
Pleating, decorative and novelty stitching, and tucking for the trade	2395
Automotive trimmings, apparel findings, and related products	2396
Schiffli machine embroideries	2397
Fabricated textile products, nec	2399

LUMBER AND WOOD PRODUCTS (sawmills, millwork, wood containers, etc.)

Logging camps and logging contractors	2411
Sawmills and planning mills, general	2421
Hardwood dimension and flooring mills	2426

Special product sawmills, nec	2429
Millwork	2431
Wood kitchen cabinets	2434
Hardwood veneer and plywood	2435
Softwood veneer and plywood	2436
Structural wood members, nec	2439
Nailed and lock corner wood boxes and shook	2441
Wood pallets and skids	2448
Wood containers, nec	2449
Mobile homes	2451
Prefabricated wood buildings and components	2452
Wood preserving	2491
Particleboard	2492
Wood products, nec	2499

FURNITURE AND FIXTURES (household, office furniture, partitions, etc.)

Wood household furniture, except upholstered	2511
Wood household furniture, upholstered	2512
Metal household furniture	2514
Mattresses and bedsprings	2515
Wood television, radio, phonograph, and sewing machine cabinets	2517
Household furniture, nec	2519
Wood office furniture	2521
Metal office furniture	2522
Public building and related furniture	2531
Wood partitions, shelving, lockers, and office and store fixtures	2541
Drapery hardware and window blinds and shades	2591
Furniture and fixtures, nec	2599

PAPER AND ALLIED PRODUCTS (paper, pulp mills, paperboard boxes, etc.)

Pulp mills	2611
Paper mills, except building paper mills	2621
Paperboard mills	2631
Paper coating and glazing	2641
Envelopes	2642
Bags, except textile bags	2643
Die-cut paper and paperboard and cardboard	2645
Pressed and molded pulp goods	2646
Sanitary paper products	2647
Stationery, tablets and related products	2648
Converted paper and paperboard products, nec	2649
Folding paperboard boxes	2651
Set-up paperboard boxes	2652
Corrugated and solid fiber boxes	2653
Sanitary food containers	2654
Fiber cans, tubes, drums, and similar products	2655
Building paper and building board mills	2661

Appendix B. List of In-Scope Four-Digit SIC Codes and Narrative Descriptions (Cont.)

PRINTING AND PUBLISHING (newspapers, books, periodicals, greeting cards, office forms, etc.)

Newspapers: publishing, publishing and printing	2711
Periodicals: publishing, publishing and printing	2721
Book printing	2732
Miscellaneous publishing	2741
Commercial printing, letterpress and screen	2751
Commercial printing, lithograph	2752
Engraving and plate printing	2753
Commercial printing, gravure	2754
Manifold business forms	2761
Greeting card publishing	2771
Blankbooks, looseleaf binders and devices	2782
Bookbinding and related work	2799
Typesetting	2791
Photoengraving	2793
Electrotyping and stereotyping	2794
Lithographic platemaking and related services	2795

CHEMICALS AND ALLIED PRODUCTS (drugs, toiletries, paints, plastics and synthetics, etc.)

Alkalies and chlorine	2812
Industrial gases	2813
Inorganic pigments	2816
Industrial inorganic chemicals, nec	2819
Plastics materials, synthetic resins, and nonvulcanizable elastomers	2821
Synthetic rubber (vulcanizable elastomers)	2822
Cellulosic man-made fibers	2823
Synthetic organic fibers, except cellulosic	2824
Biologic products	2831
Medicinal chemicals and botanical products	2833
Pharmaceutical preparations	2834
Soap and other detergents, except specialty cleaners	2841
Specialty cleaning, polishing, and sanitation preparations	2842
Surface active agents, finishing agents, sulfonated oils and assistants	2843
Perfumes cosmetics, and other toilet preparations	2844
Paints, varnishes, lacquers, enamels, and allied products	2851
Gum and wood chemicals	2861
Cyclic (coal tar) crudes, and cyclic intermediates, dyes, and organic pigments, color lakes and toners	2865
Industrial organic chemicals, nec	2869
Nitrogenous fertilizers	2873
Phosphatic fertilizers	2874
Fertilizers, mixing only	2875
Pesticides and agricultural chemicals, nec	2879
Adhesives and sealants	2891

Appendix B. List of In-Scope Four-Digit SIC Codes and Narrative Descriptions (Cont.)

Explosives	2892
Printing ink	2893
Carbon black	2895
Chemicals and chemical preparations, nec	2899

PETROLEUM AND COAL PRODUCTS (petroleum refining, lubricating oils, etc.)

Petroleum refining	2911
Paving mixtures and blocks	2951
Asphalt felts and coatings	2952
Lubricating oils and greases	2992
Products of petroleum and coal, nec	2999

RUBBER AND MISCELLANEOUS PRODUCTS (tires, rubber base products, etc.)

Tires and inner tubes	3011
Rubber and plastics footwear	3021
Reclaimed rubber	3031
Rubber and plastics hose and belting	3041
Fabricated rubber products, nec	3069
Miscellaneous plastics products	3079

LEATHER AND LEATHER PRODUCTS (leather footwear, luggage, etc.)

Leather tanning and finishing	3111
Boot and shoe cut stock and findings	3131
House slippers	3142
Men's footwear, except athletic	3143
Women's footwear, except athletic	3144
Footwear, except rubber, nec	3149
Leather gloves and mittens	3151
Luggage	3161
Women's handbags and purses	3171
Personal leather goods, except women's handbags and purses	3172
Leather goods, nec	3199

STONE, CLAY AND GLASS PRODUCTS (glass, cement, pottery, abrasives, etc.)

Flat glass	3211
Glass containers	3221
Pressed and blown glass and glassware, nec	3229
Glass products, made of purchased glass	3231
Cement, hydraulic	3241
Brick and structural clay tile	3251
Ceramic wall and floor tile	3253
Clay refractories	3255
Structural clay products, nec	3259
Vitreous china plumbing fixtures and china and earthenware fittings and bathroom accessories	3261

Vitreous china table and kitchen articles	3262
Fine earthenware (whiteware) table and kitchen articles	3263
Porcelain electrical supplies	3264
Pottery products, nec	3269
Concrete block and brick	3271
Concrete products, except block and brick	3272
Ready-mixed concrete	3273
Lime	3274
Gypsum products	3275
Cut stone and stone products	3281
Abrasive products	3291
Asbestos products	3292
Gaskets, packing, and sealing devices	3293
Minerals and earths, ground or otherwise treated	3295
Mineral wood	3296
Nonclay refractories	3297
Nonmetallic mineral products, nec	3299

PRIMARY METAL INDUSTRIES (steel mills, foundries, primary nonferrous metals, etc.)

Blast furnaces (including coke ovens), steel works, and rolling mills	3312
Electrometallurgical products	3313
Steel wire drawing and steel nails and spikes	3315
Cold rolled steel sheet, strip and bars	3316
Steel pipe and tubes	3317
Gray iron foundries	3321
Malleable iron foundries	3322
Steel investment foundries	3324
Steel foundries, nec	3325
Primary smelting and refining of copper	3331
Primary smelting and refining of lead	3332
Primary smelting and refining of zinc	3333
Primary production of aluminum	3334
Primary smelting and refining of nonferrous metals, nec	3339
Secondary smelting and refining of nonferrous metals	3341
Rolling, drawing, and extruding of copper	3351
Aluminum sheet, plate, and foil	3353
Aluminum extruded products	3354
Aluminum rolling and drawing, nec	3355
Rolling, drawing, and extruding of nonferrous metals, except copper and aluminum	3356
Drawing and insulating of nonferrous wire	3357
Aluminum foundries (castings)	3361
Brass, bronze, copper, copper base alloy foundries (castings)	3362
Nonferrous foundries (castings), nec	3369
Metal heat treating	3398
Primary metal products, nec	3399

FABRICATED METAL PRODUCTS (metal cans, cutlery, structural metal work, hardware, etc.)

Metal cans	3411
Metal shipping barrels, drums, kegs, and pails	3412
Cutlery	3421
Hand and edge tools, except machine tools and hand saws	3423
Hand saws and saw blades	3425
Hardware, nec	3429
Enameled iron and metal sanitary ware	3431
Plumbing fixture fittings and trim (brass goods)	3432
Heating equipment, except electric and warm air furnaces	3433
Fabricated structural metal	3441
Metal doors, sash, frames, molding and trim	3442
Fabricated plate work (boiler shops)	3443
Sheet metal work	3444
Architectural and ornamental metal work	3446
Prefabricated metal buildings and components	3448
Miscellaneous metal work	3449
Screw machine products	3451
Bolts, nuts, screws, rivets, and washers	3452
Iron and steel forgings	3462
Nonferrous forgings	3463
Automotive stampings	3465
Crowns and closures	3466
Metal stampings, nec	3469
Electroplating, plating, polishing, anodizing and coloring	3471
Coating, engraving and allied services, nec	3479
Small arms ammunition	3482
Ammunition, except for small arms, nec	3483
Small arms	3484
Ordnance and accessories, nec	3489
Steel springs, except wire	3493
Valves and pipe fittings, except plumbers' brass goods	3494
Wire springs	3495
Miscellaneous fabricated wire products	3496
Metal foil and leaf	3497
Fabricated pipe and fabricated pipe fittings	3498
Fabricated metal products, nec	3499

MACHINERY, EXCEPT ELECTRICAL (engines, farm and industrial machinery, metal work machinery, etc.)

Steam, gas, and hydraulic turbines and turbine generator set units	3511
Internal combustion engines, nec	3519
Farm machinery and equipment	3523
Garden tractors and lawn and garden equipment	3524
Construction machinery and equipment	3531
Mining machinery and equipment, except oil field machinery and equipment	3532

Oil field machinery and equipment	3533
Elevators and moving stairways	3534
Conveyors and conveying equipment	3535
Hoists, industrial cranes, and monorail systems	3536
Industrial trucks, tractors, trailers, and stackers	3537
Machine tools, metal cutting types	3541
Machine tools, metal forming types	3542
Special dies and tools, die sets, jigs and fixtures, and industrial molds	3544
Machine tool accessories and measuring devices	3545
Power driven hand tools	3546
Rolling mill machinery and equipment	3547
Metalworking machinery, nec	3549
Food products machinery	3551
Textile machinery	3552
Woodworking machinery	3553
Paper industries machinery	3554
Printing trades machinery and equipment	3555
Special industry machinery, nec	3559
Pumps and pumping equipment	3561
Ball and roller bearings	3562
Air and gas compressors	3563
Blowers and exhaust and ventilation fans	3564
Industrial patterns	3565
Speed changer, industrial high speed drives, and gears	3566
Industrial process furnaces and ovens	3567
Mechanical power transmission equipment, nec	3569
Typewriters	3572
Electronic computing equipment	3573
Calculating and accounting machines, except electronic computing equipment	3574
Scales and balances, except laboratory	3576
Office machines, nec	3579
Automatic merchandising machines	3581
Commercial laundry, dry cleaning, and pressing machines	3582
Air conditioning and warm air heating equipment and commercial and industrial refrigeration equipment	3585
Measuring and dispensing pumps	3586
Service industry machines, nec	3589
Carburetors, pistons, piston rings, and valves	3592
Machinery, except electrical, nec	3599

ELECTRIC AND ELECTRONIC EQUIPMENT (electrical industrial apparatus, household appliances, etc.)

Power, distribution, and specialty transformers	3612
Switchgear and switchboard apparatus	3613
Motors and generators	3621
Industrial controls	3622
Welding apparatus, electric	3623

Carbon and graphite products	3624
Electrical industrial apparatus, nec	3629
Household cooking equipment	3631
Household refrigerators and home and farm freezers	3632
Household laundry equipment	3633
Electric housewares and fans	3634
Household vacuum cleaners	3635
Sewing machines	3636
Household appliances, nec	3639
Electric lamps	3641
Current-carrying wiring devices	3643
Noncurrent-carrying wiring devices	3644
Residential electric lighting fixtures	3645
Commercial, industrial, and institutional electric lighting fixtures	3646
Vehicular lighting equipment	3647
Lighting equipment, nec	3648
Radio and television receiving sets, except communication types	3651
Phonograph records and pre-recorded magnetic tape	3652
Telephone and telegraph apparatus	3661
Radio and television transmitting, signaling, and detection equipment and apparatus	3662
Radio and television receiving type electron tubes except cathode ray	3671
Cathode ray television picture tubes	3672
Transmitting, industrial, and special purpose electron tubes	3673
Semiconductors and related devices	3674
Electronic capacitors	3675
Resistors, for electronic applications	3676
Electronic coils, transformers and other inductors	3677
Storage batteries	3691
Primary batteries, dry and wet	3692
Radiographic X-ray, fluoroscopic X-ray, therapeutic X-ray, and other X-ray apparatus and tubes; electromedical and electro-therapeutic apparatus	3693
Electrical equipment for internal combustion engines	3694
Electrical machinery, equipment, and supplies, nec	3699

TRANSPORTATION EQUIPMENT (motor vehicles, aircraft, ships, also parts, etc.)

Motor vehicles and passenger car bodies	3711
Truck and bus bodies	3713
Motor vehicle parts and accessories	3714
Truck trailers	3715
Aircraft	3721
Aircraft engines and engine parts	3724
Ship building and repairing	3731
Boat building and repairing	3732
Railroad equipment	3743

Motorcycles, bicycles, and parts	3751
Guided missiles and space vehicles	3761
Guided missile and space vehicle propulsion units and propulsion unit parts	3764
Guided missile and space vehicle parts and auxiliary equipment, nec	3769
Travel trailers and campers	3792
Tanks and tank components	3795
Transportation equipment, nec	3799

INSTRUMENTS AND RELATED PRODUCTS (optical, medical and scientific instruments, watches and clocks, etc.)

Engineering, laboratory, scientific, and research instruments and associated equipment	3811
Mechanical measuring instruments *(SIC code not listed in manual)	*3821
Automatic controls for regulating residential and commercial environments and appliances	3822
Industrial instruments for measurement, display and control of process variables; and related products	3823
Totalizing fluid meters and counting devices	3824
Instruments for measuring and testing of electricity and electrical signals	3825
Measuring and controlling devices, nec	3829
Optical instruments and lenses	3832
Surgical and medical instruments and apparatus	3841
Orthopedic, prosthetic, and surgical appliances and supplies	3842
Dental equipment and supplies	3843
Opthalmic goods	3851
Photographic equipment and supplies	3861
Watches, clocks, clockwork operated devices, and parts	3873

OTHER MANUFACTURING INDUSTRIES (jewelry, musical instruments, pens, etc.)

Jewelry, precious metal	3911
Silverware, plated ware, and stainless steel ware	3914
Jewelers' findings and materials, and lapidary work	3915
Musical instruments	3931
Dolls	3942
Games, toys and childrens' vehicles; except dolls and bicycles	3944
Sporting and athletic goods, nec	3949
Pens, mechanical pencils, and parts	3951
Lead pencils, crayons, and artists' materials	3952
Marking devices	3953
Carbon paper and inked ribbons	3955
Costume jewelry and costume novelties, except precious metal	3961
Feathers, plumes, and artificial trees and flowers	3962
Buttons	3963
Needles, pins, hooks and eyes, and similar notions	3964

Brooms and brushes	3991
Signs and advertising displays	3993
Burial caskets	3995
Linoleum, asphalted-felt base, and other hard surface floor coverings, nec	3996
Manufacturing industries, nec	3999
RAILROAD TRANSPORTATION (railroads, terminals, etc.)	
Switching and terminal establishments	4013
LOCAL AND SUBURBAN PASSENGER TRANSPORTATION (bus, rail or subway, etc.)	
Local and suburban transit	4111
Local passenger transportation, nec	4119
Taxicabs	4121
Schoolbuses	4151
Terminal and joint terminal maintenance facilities for motor vehicle passenger transportation	4171
Maintenance and service facilities for motor vehicle passenger transportation	4172
TRUCKING AND WAREHOUSING (trucking, public warehousing, etc.)	
Local trucking without storage	4212
Local trucking with storage	4214
Farm product warehousing and storage	4221
Refrigerated warehousing	4222
Household goods warehousing and storage	4224
General warehousing and storage	4225
Special warehousing and storage, nec	4226
Terminal and joint terminal maintenance facilities for motor freight transportation	4231
WATER TRANSPORTATION (deep sea, coastal, river and canal, ferries, etc.)	
Deep sea foreign transportation	4411
Transportation to and between noncontiguous territories	4421
Coastwise transportation	4422
Intercoastal transportation	4423
Great lakes - St. Lawrence seaway transportation	4431
Transportation on rivers and canals	4441
Ferries	4452
Lighterage	4453
Towing and tugboat service	4454
Local water transportation, nec	4459
Marine cargo handling	4463
Canal operation	4464
Water transportation services, nec	4469

TRANSPORTATION BY AIR (airlines, airports, etc.)	
Air transportation, certified carriers	4511
Air transportation, noncertified carriers	4521
Airports and flying fields	4582
Airport terminal services	4583
PIPELINES, EXCEPT NATURAL GAS (crude petroleum, pipelines, refined petroleum, etc.)	
Crude petroleum pipe lines	4612
Refined petroleum pipe lines	4613
Pipe lines, nec	4619
TRANSPORTATION SERVICES (freight forwarding, travel agencies, etc.)	
Rental of railroad cars with care of lading	4742
Inspection and weighting services connected with transportation	4782
Packing and crating	4783
Fixed facilities for handling motor vehicle transportation, nec	4784
Services incidental to transportation, nec	4789
COMMUNICATION (telephone communication, radio and television broadcasting, etc.)	
Telephone communication (wire or radio)	4811
Telegraph communication (wire or radio)	4821
Radio broadcasting	4832
Television broadcasting	4833
Communication services, nec	4899
ELECTRIC, GAS AND SANITARY SERVICES (electrical generation and distribution, gas transmission and distribution, sewage systems, etc.	
Electric services	4911
Natural gas transmission	4922
Natural gas transmission and distribution	4923
Natural gas distribution	4924
Mixed, manufactured or liquefied petroleum gas production and/or distribution	4925
Electric and other services combined	4931
Gas and other services combined	4932
Combination utilities, nec	4939
Water supply	4941
Sewerage systems	4952
Refuse systems	4953
Sanitary services, nec	4959
Steam supply	4961
Irrigation systems	4971

WHOLESALE TRADE, DURABLE GOODS (motor vehicles and parts, construction materials and supplies, furniture, electric appliances etc.)

Automobiles and other motor vehicles	5012
Automotive parts and supplies	5013
Tires and tubes	5014
Lumber, plywood and millwork	5031
Construction materials, nec	5039
Metal service centers and offices	5051
Coal and other minerals and ores	5052
Scrap and waste materials	5093

WHOLESALE TRADE, NONDURABLE GOODS (paper products, food and beverage products, drugs, apparel, etc.)

Chemicals and allied products	5161
Petroleum bulk stations and terminals	5171
Petroleum and petroleum products wholesalers, except bulk stations and terminals	5172

AUTOMOTIVE DEALERS AND SERVICE STATIONS (motor cycles, recreation vehicles, etc.

Motor vehicle dealers (used only)	5521
Auto and home supply stores	5531
Gasoline and service stations	5541

PERSONAL SERVICES (laundry, barber shops, shoe repair, etc.)

Power laundries, family and commercial	7211
Garment pressing, and agents for laundries and dry cleaners	7212
Linen supply	7213
Diaper service	7214
Coin-operated laundries and dry cleaning	7215
Dry cleaning plants, except rug cleaning	7216
Carpet and upholstery cleaning	7217
Laundry and garment services, nec	7219
Photographic studios, portrait	7221
Beauty shops	7231
Barber shops	7241
Shoe repair shops, shoe shine parlors, and hat cleaning shops	7251
Funeral service and crematories	7261
Miscellaneous personal services	7299

BUSINESS SERVICES (advertising, mailing, building maintenance, data processing, etc.)

Direct mail advertising services	7331
Blueprinting and photocopying services	7332

Commercial photography, art, and graphics	7333
Stenographic services; and reproduction services, nec	7339
Window cleaning	7341
Disinfecting and exterminating services	7342
Cleaning and maintenance services to dwellings and other buildings, nec	7349
Research and development laboratories	7391
Photofinishing laboratories	7395
Commercial testing laboratories	7397
Business services, nec	7399
AUTO REPAIR, SERVICES AND GARAGES (auto rentals, general auto repair, etc.)	
Passenger car rental and leasing, without drivers	7512
Utility trailer and recreational vehicle renting	7519
Top and body repair shop	7531
Tire retreading and repair shops	7534
Paint shops	7535
General automotive repair shops	7538
Automotive repair shops, nec	7539
Car washes	7542
Automotive services, except repair and car washes	7549
OTHER REPAIR SERVICES (radio and TV repair, electric appliance repair, etc.)	
Radio and television repair shops	7622
Refrigeration and air conditioning service and repair shops	7623
Electrical and electronic repair shops, nec	7629
Watch, clock, and jewelry repair	7631
Reupholstery and furniture repair	7641
Welding repair	7692
Armature rewinding shops	7694
Repair shops and related services, nec	7699
HEALTH SERVICES (offices of doctors, dentists, hospitals, medical laboratories, etc.)	
General medical and surgical hospitals	8062
Medical laboratories	8071
Dental laboratories	8072
Health and allied services, nec	8091
MUSEUMS, BOTANICAL, ZOOLOGICAL GARDENS	
Museums and art galleries	8411
Arboreta, botanical, and zoological gardens	8421

APPENDIX C. INTENDED CONTROL CODES

CODE	PERSONAL PROTECTIVE EQUIPMENT	
EP	Ear (Hearing) Protection:	Muffs, Plugs
EF	Eye and Face Protection:	Face shields, Goggles, Safety glasses, Welding helmets, Laser glasses and goggles
FP	Foot Protection:	Safety shoes or boots, Foot guards
HG	Hand Protection:	Protective gloves
BC		Protective barrier creams
HP	Head Protection:	Dielectric, Bump, Impact
PS	Protective Clothing:	Full protective suit
PA		Apron
PC		Coat
PP		Pants

RESPIRATORY PROTECTIVE DEVICES

CF	Chemical cartridge respirator with full facepiece
CH	Chemical cartridge respirator with half facepiece
CQ	Chemical cartridge respirator with quarter facepiece
FF	Particulate filter respirator with full facepiece
FH	Particulate filter respirator with half facepiece
FQ	Particulate filter respirator with quarter facepiece
RF	Combination particulate filter and chemical cartridge respirator with full facepiece
RH	Combination particulate filter and chemical cartridge respirator with half facepiece
RQ	Combination particulate filter and chemical cartridge respirator with quarter facepiece
GR	Gas mask (canister) respiratory devices
SR	Supplied air respiratory devices Self-contained respiratory apparatus Air line respirator Hose mask with and without blowers Abrasive blasting helmets, hoods or masks
OR	Other respiratory devices

VENTILATION

DV	Dilution ventilation
LV	Local exhaust ventilation
NV	Natural ventilation
LG	Local gravity ventilation

OTHER MEANS OF CONTROL

IC	Isolation, Enclosure, Shielding
AC	Administrative Control (limiting the time of employee's exposure)
OC	Other - Explain
NC	No Control

APPENDIX D. PHYSICAL EXPOSURES

ELECTROMAGNETIC RADIATION	CODED AS:
Laser	LM
Maser	LM
Ionizing radiation	IO
X-ray radiation	XR
Infrared radiation	IR
Microwave radiation	MW
Long wave radio frequency	RF
Ultraviolet radiation	UV
Ultraviolet radiation - black light	BL
Ultraviolet radiation - germicidal lamp	GC

NOISE	
Continuous noise	NC
Impact noise	NM
Ultrasonic	NY

VIBRATION	
Segmental vibration	VS
Whole body vibration	VW

TEMPERATURE	
Elevated temperature	ET
Depressed temperature	DT

PRESSURE	
Decreased air pressure	DA
Increased air pressure	IA

APPENDIX E. NOES PRODUCT USE TERMS (PUTS)

Abrasive shot
Abrasive blasting
Abrasive grinding
Abrasive, NEC
Absorbent, gas
Absorbent, liquid
Absorbent, solid
Absorbent, ultraviolet
Accelerator
Accelerator, rubber
Acoustical plaster
Acoustical tile
Activator
Additive, chemical process
Additive, concrete
Additive, fuel
Additive, fuel oil
Additive, ink
Additive, NEC
Additive, paint
Adhesive, animal-glue
Adhesive, NEC
Adhesive, rubber-base
Adhesive, starch
Adhesive, synthetic-resin
Air freshener
Alcohol
Algicide
Alkyl naphthalene sulfonate
Alkylbenzene sulfonate
Alloy
Amino acid
Analgesic
Analytical reagent, NEC
Anesthetic
Animal repellent
Antacid
Anti-foaming agent
Anti-sieze compound
Antibacterial agent
Antibiotic
Anticaking agent
Anticoagulent
Antifoaming agent
Antifreeze, foodgrade
Antifreeze, gasoline
Antifreeze, NEC
Antifreeze, radiator
Antifreeze, windshield
Antihistamine
Antimildew solution
Antineoplastic agent
Antioffset and smooth lay compound
Antioxidant
Antiseptic
Antisplattering agent
Antistatic agent
Antisticking agent
Antisticking agent, food
Arterial fluid
Asphalt
Assay, metallurgical
Assay, NEC
Assay, pharmacological
Astringent
Barrier cream
Base
Belt dressing
Binder, abrasive-wheel
Binder, foundry
Binder, masonary
Binder, NEC
Binder, sizing
Biocide
Biological stain
Blanketwash
Bleaching agent
Bluing agent
Body powder
Boiler water treatment chemical
Brake drum
Brake fluid
Brake lining
Brake pad
Brakes, airplane
Brakes, automotive
Braze, BRD
Braze, BRF
Braze, BRI
Braze, BRR
Braze, BRT
Brick
Brightener
Bronchial dialator
Buffer
Buffing compound
Builder, detergent
Burnishing compound
Cable, wire
Calibrating solution
Carpet pad
Catalyst

Caulking compound
Cement, alumina
Cement, masonary
Cement, NEC
Cement, portland
Cement, pozzolan
Ceramic, clay
Ceramic, NEC
Chalk
Chemical, NEC
Clay
Clay, alumina
Clay, colloidal
Cleaner, acidic
Cleaner, automotive
Cleaner, basic
Cleaner, bowl
Cleaner, carburetor
Cleaner, carpet
Cleaner, caustic
Cleaner, electrical contact
Cleaner, fabric
Cleaner, floor
Cleaner, food
Cleaner, fuel
Cleaner, general
Cleaner, glass
Cleaner, hand
Cleaner, masonary
Cleaner, metal
Cleaner, NEC
Cleaner, plastic
Cleaner, tire
Cleaner, type
Cleaner, waterless hand
Clutch pad, automotive
Coagulant
Coal tar
Coating, NEC
Coating, roof
Coke
Color equalizer
Coloring agent
Compound, joint
Concrete
Conditioner, ink
Conditioner, NEC
Conditioner, paint
Conductive powder
Construction material, metal products - NEC (use CMMP)
Construction material, other products - NEC (use CMNEC)
Construction material, wood products - NEC (use CMWP)
Contact cement
Control reagent
Coolant controller
Coolant, NEC
Copy machine fluid
Correction fluid
Corrosion inhibitor
Cosmetic
Cosmetic, NEC
Cream relaxer, hair
Cream rinse, hair
Curing agent
Dairy product (specify - i.e., cream, milk)
Deactivator, photographic
Deburring powder
Dechlorinating agent
Decongestant
Deemulsifier
Defoamer agent
Defoliant
Deglasing solution
Degreaser
Dehairing agent
Dehydrating agent
Deicer, sidewalk
Deliming agent
Denaturant
Deodorant
Deoxidizer
Depressant
Descumming agent
Desensitizing agent
Desiccant
Detergent
Developer replenisher
Developer starter
Developer, NEC
Diagnostic reagent
Diagnostic reagent, pharmaceutical
Dietary supplement
Disinfectant
Dispersant
Dope
Dough conditioner
Drain opener
Drawing compound

Drier
Drilling fluid
Dry cleaning agent
Dry milk
Drywall
Duplicator fluid
Dust control compound
Dust mop treatment
Dye solvent
Dye, acid
Dye, azoic
Dye, basic
Dye, direct
Dye, disperse
Dye, mordant
Dye, NEC
Dye, reactive
Dye, solvent
Dye, sulfur
Dye, vat
Electrode cream
Electrode, arc
Electrode, NEC
Electrolyte
Embalming fluid
Emulsifier
Enamel
Epoxide
Equalizer, NEC
Etching compound
Expectorant
Explosive
Extender, food
Extender, pigment
Eye drops
Eyewash
Fabric coating compound
Fabric finisher
Fabric softener
Fabric, NEC
Fabric, synthetic
Fiberboard
Fiberglass
Fiberglass fabric
Fiberglass insulation
Filler, dental
Filler, NEC
Film hardener
Film, NEC
Filter media
Finishing compound
Fire extinguisher
Fire retardant
Fixative, biological
Fixative, photographic
Fixing agent, chemical
Fixing agent, mechanical
Fixing agent, NEC
Fixing agent, perfume
Flatting agent
Flavor enhancer
Flavoring agent
Flocculant, anionic
Flocculant, cationic
Flocculant, NEC
Floor wax
Flour
Fluid, cutting
Flux, brazing
Flux, brazing BRD
Flux, brazing BRF
Flux, brazing BRI
Flux, brazing BRR
Flux, brazing BRT
Flux, galvinizing
Flux, NEC
Flux, soldering SOE
Flux, soldering SOT
Flux, soldering SOD
Flux, soldering SOI
Flux, soldering
Flux, tinning
Flux, welding AHW
Flux, welding ARW
Flux, welding ESW
Flux, welding FCA
Flux, welding MIG
Flux, welding OFW
Flux, welding OWP
Flux, welding PAW
Flux, welding REW
Flux, welding SAW
Flux, welding STW
Flux, welding TIG
Foaming agent
Food additive
Food preservative
Fountain solution
Freon
Fuel
Fumigant
Fungicide

Furniture polish
Galvanizing compound
Gasoline, leaded
Gasoline, unleaded
Gel, NEC
Gelatin
Germicide
Glass, alkali
Glass, alumina-silica
Glass, borosilicate
Glass, ceramic
Glass, fiber
Glass, lead
Glass, NEC
Glass, silica
Glass, soda-lime
Glazing compound
Grains (specify-i.e., oats, corn)
Gravel
Grease
Grease cutter
Grinding compound
Grinding fluid
Grinding wheel
Grout
Gum
Hair conditioner
Hair dye
Hair rinse
Hair set
Hair spray
Hair straightener
Hair tonic
Hardener
Heat styling lotion, hair
Heat transfer compound
Heat treating chemical
Herbicide
Hops
Impregnated paper, printing
Indicator
Inhalant, bronchial
Inhibitor
Inhibitor, scale
Ink drier
Ink remover
Ink, copying
Ink, drawing
Ink, lithographic
Ink, marking
Ink, metal marking
Ink, printing
Ink, screen process
Ink, stamping
Ink, stencil
Ink, writing
Insecticide
Insulation
Insulation, electrical
Intensifier
Jet fuel, kerosine-type
Jet fuel, naphtha-type
Kerosine
Lacquer
Lacquer thinner
Lapping compound
Latex
Latex, acrylic
Laundry additive
Laxative
Layout fluid
Leak detector
Leather
Leather conditioner
Leavening agent
Lecithin
Lignosulfonate
Limestone
Liniment
Lining compound
Lotion, NEC
Lubricant
Machine coolant
Mastic
Meat tenderizer
Media
Medical test reagent, NEC
Medicine, NEC
Metal (specify or use alloy-i.e., steel, copper, lead or alloy)
Metal defect detector
Metal surface treatment
Mineral spirits
Moisturizer
Mold release
Molding compound
Mortar
Mouthwash
Nail polish
Neutralizing agent
Nutrient media
Nylon

Offset printing compound
Oil, animal
Oil, cutting
Oil, fuel (general)
Oil, fuel no. 1
Oil, fuel no. 2
Oil, gear
Oil, honing
Oil, hydraulic
Oil, linseed
Oil, lube
Oil, machine
Oil, mineral
Oil, motor
Oil, NEC
Oil, penetrating
Oil, pine
Oil, quenching
Oil, tapping
Oil, vegetable
Ointment
Oxidizing agent
Packing compound
Padding compound
Paint drier
Paint remover
Paint thinner
Paint, acrylic
Paint, alkyd
Paint, epoxy
Paint, latex
Paint, marine
Paint, NEC
Paint, oil base
Paint, phenolic
Paint, silicone
Paint, vinyl
Paper, NEC
Paper, photographic
Paper, reflective
Paraffin
Penetrant
Peptone
Perfume
Permanent solution, hair
Pesticide, avicide
Pesticide, larvicide
Pesticide, miticide
Pesticide, molluscicide
Pesticide, NEC
Pesticide, pediculicide
Pesticide, rodenticide
Petroleum dressing
Petroleum ether
Petroleum jelly
Petroleum naphtha
Petroleum spirit
Pharmaceutical compound, NEC
Photo resist
Photographic chemical, NEC
Photographic conditioner
Photographic developer
Photographic emulsion
Photographic film
Photographic film, x-ray
Photographic fixer
Photographic plate cleaner
Photographic plate developer
Pigment
Pine tar
Pip
Pipe joint sealer
Plasma
Plaster
Plaster board
Plastic
Plastic body filler
Plasticizer
Plating compound, chrome
Plating compound, tin
Plating compound, NEC
Plating resist
Plating solution
Polish
Polymer, inorganic
Polymer, organic
Porcelain
Potting compound
Power steering fluid, automotive
Precipitant
Preservative
Primer
Printing chemical
Propellant-aerosol
Protein
Pumice
Putty
Quenchant, synthetic
Radioactive isotope
Reagent, biological
Reagent, NEC
Reducing agent

Refractory compound
Refrigerant
Releasing agent
Remover, film
Remover, flux
Remover, glaze
Remover, rosin
Replenisher, NEC
Resin, acrylic
Resin, alkyd
Resin, amino
Resin, epoxy
Resin, formaldehyde
Resin, melamine-urea
Resin, melamine
Resin, natural
Resin, NEC
Resin, phenolic
Resin, polyamide
Resin, polyester
Resin, polyether
Resin, polypropylene
Resin, polyurethane
Resin, polyvinyl
Resin, silicone
Resin, styrene
Resin, melamine-urea
Retaining compound (for mechanical fasteners)
Retarder
Reversal bath
Roller cleaner, printing
Roofing cement
Roofing felt
Roofing paper
Roofing tile
Rosin
Rubber, acrylic-butadiene
Rubber, acrylonitrile
Rubber, butadiene-styrene
Rubber, butyl
Rubber, chloroprene
Rubber, foam
Rubber, isobutylene-isoprene
Rubber, isoprene
Rubber, NEC
Rubber, neoprene
Rubber, polybutadiene
Rubber, silicone
Rubber, thiokol
Rubber, urethane
Rubbing compound
Rust inhibitor
Rust preventative
Rust remover
Sand
Sand paper
Sand, silica-free
Sanding belt
Sanding disk
Sanitizer
Sanitizer, NEC
Saver, blanket
Scratch remover
Sealant
Seasoning, food
Sedative
Shake, roofing
Shampoo
Shaving cream
Shellac
Shingle, asphalt
Shortening
Silica gel
Sizing compound
Soap, liquid
Soap, NEC
Soap, solid
Soapstone
Softener
Soil additive
Solder reflow agent
Solder, NEC
Solder, SOD
Solder, SOE
Solder, SOI
Solder, SOT
Solvent, acid
Solvent, alcohol
Solvent, aldehyde
Solvent, amine
Solvent, brominated
Solvent, chlorinated
Solvent, ether
Solvent, fluorinated
Solvent, glycol
Solvent, ketone
Solvent, NEC
Spackle
Specific chemical compound (specify-i.e., xylene)
Specific dairy product (specify-i.e., light cream)

Specific food grain (specify-i.e., oats)
Specific metal/alloy (specify-i.e., copper)
Specific mineral (specify-i.e., flint)
Spot indicator
Stabilizer, emulsion
Stabilizer, foam
Stabilizer, heat
Stabilizer, NEC
Stabilizer, photographic
Stain remover
Staining agent
Starch, amylose
Starch, cassava
Starch, corn
Starch, NEC
Starch, potato
Starch, rice
Starch, saga
Starch, wheat
Starting fluid, automotive
Steam cleaning compound
Sterilizing agent
Steroid, anabolic androgen
Steroid, corticoid
Steroid, progestational
Stimulant
Stripping compound
Stripping solution
Sulfenamide
Surfactant, anionic
Surfactant, cationic
Surfactant, NEC
Surfactant, nonionic
Surfactant, semipolar
Surfactant, zwitterionic
Sweeping compound
Sweetener
Syrup, cough
Talcum powder
Tall oil
Tallow
Tannin
Tanning agent
Tape, adhesive
Tape, graphite-based
Tape, NEC
Thickener (not food item)
Thickener, food
Thinner
Thinner, flux
Thiuram
Tile, ceramic
Tile, floor
Tint
Tinting agent
Toner, hair
Toner, NEC
Toothpaste
Tracer, radioactive
Tracing cloth powder
Tranquilizer
Transmission fluid
Tung oil
Turpentine
Undercoating
Varnish
Varnish, binding
Vegetable product
Vehicle, paint
Vehicle, pigment
Vitamin
Vulcanizing agent
Water softener
Water treatment compound
Waterproofing agent
Wax
Wax, paraffin
Welding rod, AHW
Welding rod, ARW
Welding rod, ESW
Welding rod, FCA
Welding rod, MIG
Welding rod, NEC
Welding rod, OFW
Welding rod, OWP
Welding rod, PAW
Welding rod, REW
Welding rod, SAW
Welding rod, STW
Welding rod, TIG
Wetting agent
Whitening agent
Wire, NEC
Wire, welding
Wood filler, NEC
Wood filler, plastic
Wood preservative
Wood sealer
Wood stain
Wood surface treatment

APPENDIX F. OPERATIONAL DEFINITIONS OF ELEVEN CRITICAL CHRONIC TRAUMA HAZARDS

Within the scope of these operational definitions, encoding of chronic trauma exposure is, of necessity, based on observations of the worksite made at the time of the survey. The key is that the motion or lack of motion fitting each operational definition must be relatively continuous and/or repetitive throughout the work day.

1. PP - Passive-Postures - refers to long term, stationary standing where the legs and feet would tire - e.g., standing passively for hours in front of a machine. Example occupations include cash register operator, machine tenders, and tire builders. Other passive postures to be identified would include those that involve the application of continuous pressure to body parts, e.g., glass blowers resting their elbows on benches, and/or leaning up against equipment, a wall, a ladder, or on benches.

2. AP - Awkward-Postures - refers to any body position that an individual must assume for prolonged periods involving extreme torso bending, tilted neck positions, semiprone positions, kneeling positions, and extreme deviation of hips from shoulder. Examples occur in service work - such as auto maintenance, electrical, ventilation and plumbing work. Additional examples of awkward postures include those tasks which require prolonged pushing with legs, climbing, crawling, or stooping.

3. LP - Lifting-Postures - refers to frequent bending and/or lifting-unaided, involving the waist, lower back and knees. The unaided carrying of materials typically observed at construction sites would also fit this classification.

4. AT - Arm-Transport Movements - refers to moving small or light objects with the arms from one position to another. Specifically this involves only movements of the upper torso, such as light duty pushing-pulling with files, sandpaper, or trowels. Folding and pressing of fabrics are other tasks which apply in this classification.

5. ST - Shoulder-Transport - refers to movements which are similar to arm-transport except that they involve larger, more forceful movements where the upper torso is repeatedly shifting; e.g., turning large wheels or wrenches, moving large work pieces short distances, and reaching up and over the head. Additionally, pushing and pulling operations involving brooms, rakes, mops and certain types of shoveling may also require upper torso movements.

6. HM - Hand/Wrist Manipulations - refers to movements which involve turning heavy objects, assembling and handling middle size objects (5-15 pound range), and the use of lightweight power and/or hand tools, such as screw drivers, tongs, scissors, tin snips, and hand staplers. Painting, rubbing or polishing small objects also fit in this category.

Appendix F. Operational Definitions of Eleven

Critical Chronic Trauma Hazards (Cont.)

7. FM - Finger-Manipulations - refers to fine precision type work, involving such actions as pinching, use of tweezers, electronic assembly-board component insertion and micro soldering. Twisting small screws, writing, typing, pushing keys, operating cash registers, entering data, using needles, pins, and picking up small objects are additional operations associated with this classification.

8. MP - Machine Paced Work - refers to workers interspersed with machines in a continuous work process in which they must perform repetitive tasks at set times and intervals dictated by the machine components in the process. Conveyor-line operations may involve such tasks as assembling, packaging, sorting, folding.

9. EM - Equipment Monitoring - refers to those processes closely allied with inspection tasks. Certain work operations require the presence of workers whose main function is to remain alert to any malfunctions or emergencies and to take corrective action when such events occur. In such cases, the lack of activity and the repetition of simple functions lead to boredom and excessive fatigue characteristic of mental chronic trauma. Workers in power plants and automated chemical manufacturing exemplify this type of job. Similar jobs that also involve monitoring and checking are quality control and product inspection tasks where a worker checks output product against specifications, e.g., sorting out defective items for correction or disposal.

10. LL - Light/Glare Level - refers to some of the following questions: Are there unusual lighting conditions with or without shades or shields present in the work place? Are there unusual reflective or bright surfaces or materials present? Does the worker use an automated display of any type, such as CRT, VDT, or a simple TV monitor? Is there a great amount of contrast present, i.e., areas that are bright, next to work areas that are dark? Does the individual move from areas of brightness to darkness or vice versa, frequently? What about the color of the lights? Are there any unusual hues from the illumination, such as blues, or reds? (Record the presence of any of the above conditions by coding LL.)

11. DL - Diminished Light - refers to the absence of natural or artificial light in the general working area, except for lighting devices carried by individual workers. An example would be the helmet used by miners.

APPENDIX G. JOBS AND CHRONIC EFFECTS OF TRAUMA

JOB	DISEASE CONDITION
Building and civil engineering workers	Kienbock's disease
Glass cutters (nerve impairment)	Carpal tunnel syndrome
Cobblers	Funnel chest
Female carders	Varicose veins
Female fibre drawers	Varicose veins
Female fibre roving machine operators	Varicose veins
Female postal workers	Varicose veins
Manual workers	Kienbock's disease
Layers of glued floor coverings	Hygroma of knee
Typists	Beat conditions
Mechanical draftsmen	Beat conditions
Mushroom growers	Onychopathy
Miners	Beat hand*
Joiners	Beat hand
Construction workers	Beat hand
Caulkers	Beat hand
Carpet layers	Beat knee**
Miners	Beat knee
Asphalt layers	Beat knee
Joiners	Beat knee
Pottery makers	Tenosynovitis
Glaze dipping	Tenosynovitis
Brick making	Tenosynovitis
Assembly line workers	Tenosynovitis
Belt conveyor sorting for food canning	Tenosynovitis
Press operators	Tenosynovitis
Evisceration and trussing chickens	Tenosynovitis
Cash register operators	Cervicobrachial disorders
Telephone operators	Chronic laryngitis
Fire fighters	Ischaemic heart disease
Cash register operators	Fatigue and muscle weakness
Teleprinter operators	Cramp and myalgia
Artificial inseminator (cattle)	Digital ischaemia
Type solderers	Finger tip problems
Immobile standing jobs	Varicose veins
Bus drivers	Cervical and lumbar spondylarthritis
Bus drivers	Disorders of digestive system
Bus drivers	Psychoneuroses
Glass blowers	Atrophy of the hands
Computer keyboard operators	Slowed palmer & knee reflexes
Cash register operators	Chronic irreversible fatigue
Glass cutting and engraving	Compression of peripheral nerves

Appendix G. Jobs and Chronic Effects of Trauma (Cont.)

JOB	DISEASE CONDITION
Ironing	Compression of peripheral nerves
Rolling-mill workers	Osteoarthritis of elbow
Traffic controllers	Hypertension, peptic ulcer
Glass cutters	Carpel tunnel
Strawberry pickers	Foot drop: lateral popliteal nerve palsy
Farm workers	Manure shovelers' hip

* Subcutaneous cellulitis of the hand
** Bursitis or subcutaneous cellulitis of the knee

APPENDIX H. CODING CONVENTIONS FOR WELDING, BRAZING, SOLDERING, AND THERMAL CUTTING PROCESSES

Welding

Oxyfuel Gas Welding	OFW
oxyacetylene welding pressure gas welding	
Resistance Welding	REW
resistance spot welding resistance seam welding production welding electromagnetic solid-state welding	
Arc Welding	ARW
shield metal arc welding metal arc welding carbon arc welding	
Gas Metal Arc Welding - (MIG Welding)	MIG
pulsed arc welding short circuit arc welding electrogas welding spray transfer welding buried arc welding	
Gas Tungsten Arc Welding (TIG Welding)	TIG
gas tungsten arc spot welding	
Flux Cored Arc Welding	FCA
Submerged Arc Welding	SAW
Plasma Arc Welding	PAW
Stud Welding	STW
Atomic Hydrogen Welding	AHW
Electro-slag Welding	ESW
Other Welding Process	OWP

Appendix H. Coding Conventions for Welding, Brazing, Soldering, and Thermal Cutting Processes (Cont.)

Brazing

Record one of the following brazing processes.

Torch	BRT
Furnace	BRF
Dip	BRD
Induction	BRI
Resistance	BRR

Record the braze metal but not the base metal.

Soldering

Record one of the following soldering processes.

Electric Irons	SOE
Torch	SOT
Dip	SOD
Induction	SOI

Record the solder but not the base metal.

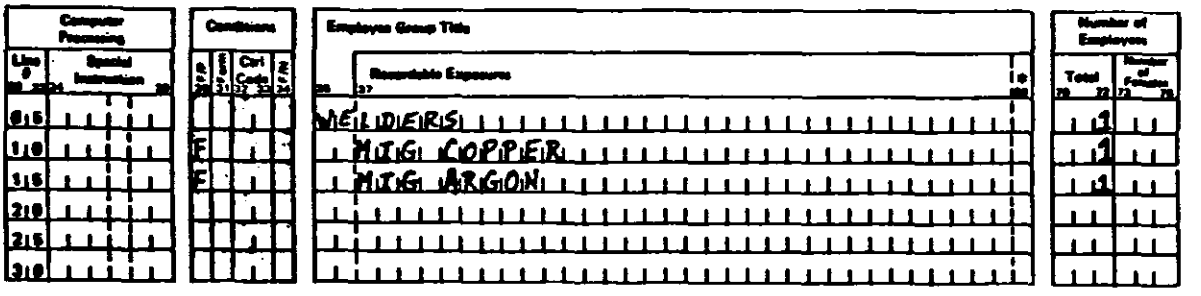
Cutting

Record one of the following cutting processes.

Oxyfuel Gas Cutting	OFC
Arc Cutting	ARC
Plasma Arc Cutting	PAC

Example No. 1

A copper plate is being welded by gas metal arc welding. The consumable electrode is also copper and argon is used as the inert gas shield. This process would be coded as follows:



The outputs of this process, which are not coded are:

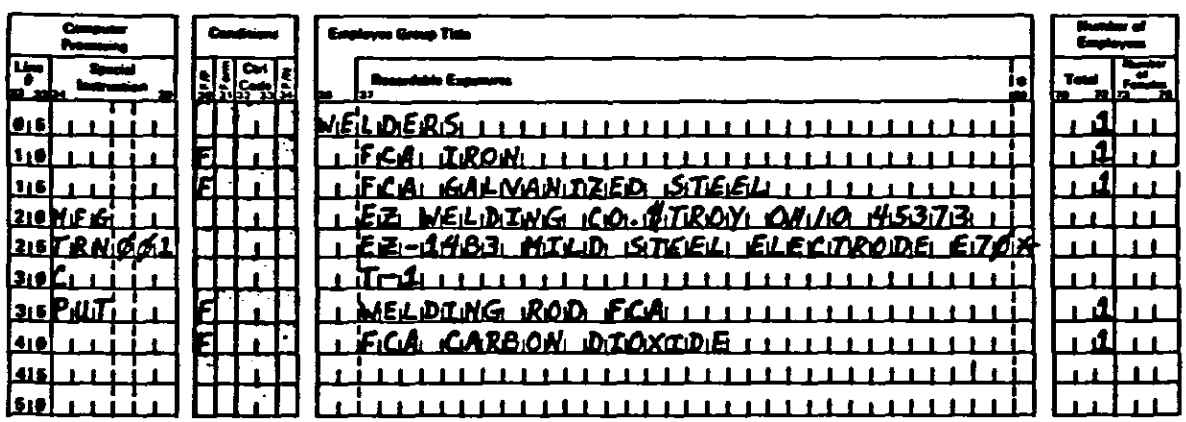
UV-light
copper fumes
copper oxides
nitrogen oxides
ozone

Appendix H. Coding Conventions for Welding, Brazing, Soldering, and Thermal Cutting Processes (Cont.)

Example No. 2

A welder is connecting a steel part to a galvanized steel frame by flux cored arc welding. The flux containing consumable electrode is called EZ-14B3 Mild Steel Electrode E70T-1; mfg. EZ Welding Co., Troy, Ohio 45373. The shielding gas is CO_2.

Code as follows:



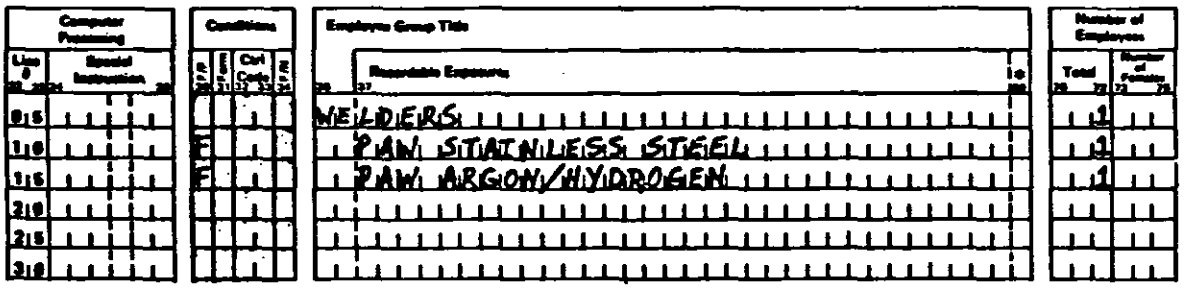
The outputs not to be recorded are:

UV-light	products contained in the flux
iron oxides	asbestos
zinc oxides	feldspar
nitrogen oxides	mica
sulfur dioxide	steatite
silicon oxide	titanium dioxide
manganese oxide	calcium carbonate
carbon dioxide	aluminum oxide
carbon monoxide	cadmium
ozone	fluorine compounds
zinc oxide	

Example No. 3

Thick stainless steel plates are being joined by plasma arc welding. A mixture of 60% argon and 40% hydrogen gas is used as a fuel and a shield.

Code as follows:



The outputs are:

x-rays	UV-light
infrared	noise
ozone	iron oxides
chromium oxides	nitrogen oxides
silicon oxides	molybdenum oxides
nickel oxides	

NOTE: If welding or cutting is being done on any metal which contains a lead base paint, be sure to code for lead.

If the metal is treated with a phosphate rust proofing -- record phosphine.

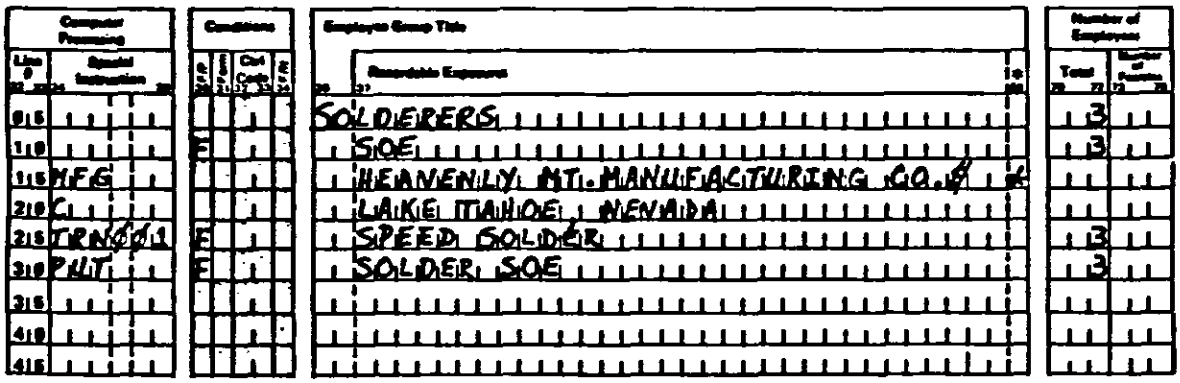
If a chlorinated hydrocarbon is being decomposed -- record phosgene, hydrogen chloride, chlorine.

Appendix H. Coding Conventions for Welding, Brazing, Soldering, and Thermal Cutting Processes (Cont.)

Example No. 4

When coding for brazing or soldering where the only input is a trade name, first code for the process then on the following lines code for the manufacturer and the trade name. The mnemonic will come after the PUT term.

Three employees are soldering electronic circuit boards with heating irons and using speed solder by Heavenly Mt. Manufacturing Co. Lake Tahoe, Nevada.



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