Association of Occupational and Environmental Clinics

Occupational and Environmental Disease Surveillance Database

Summary of AOEC Database Case Reports

1997 - 2000

Prepared by:

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Copies of the AOEC Database software, with installation instructions and documentation, are available to member clinics from the AOEC office.

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Funding from the National Institute for Occupational Safety and Health, Cooperative Agreement U50/CCU309667 is gratefully acknowledged.

I. INTRODUCTION

Background

The Association of Occupational and Environmental Clinics (AOEC) has developed a unique national surveillance database for a broad range of occupational and environmental illnesses and chronic injuries. This Occupational and Environmental Disease Surveillance Database has been supported in part by multi-year cooperative agreements with the National Institute for Occupational Safety and Health (NIOSH). In addition, AOEC member clinics, clinicians, and staff have volunteered their efforts to contribute case-report data to this project and to provide Database direction and oversight.

Since its founding in 1987, the Association of Occupational and Environmental Clinics has grown to a network of more than 60 clinics and more than 250 individuals committed to improving the practice of occupational and environmental medicine through information sharing and collaborative research. The chief long term goal of AOEC is to facilitate the prevention and treatment of occupational and environmental illnesses and injuries through collaborative reporting and investigation of health problems.

The first extensive report on the AOEC Database summarized 2,774 cases which were reported by AOEC clinics during the first three years of the Database project (1991 to 1993). A followup report described 3,080 cases of illness or injury diagnosed by participating AOEC clinics in 1994 to 1996. This report describes 3,929 cases diagnosed during the time period 1997 to 2000. Where it is of interest, we have identified trends based not only on the last four years of data but also incorporating results from 1991 to 1996.

Methods

Case reports are submitted by participating member clinics to the AOEC Office, where Katherine Kirkland (AOEC Executive Director) and Ingrid Denis (Program Coordinator) maintain the database. The AOEC staff receive case reports from clinics, and perform coding, data entry, and preliminary quality control. AOEC staff also communicate frequently with member clinics regarding Database issues and questions on case reports. Further quality control and summary reporting is provided by Katherine Hunting of the George Washington University (GWU) Department of Environmental and Occupational Health, assisted during the preparation of this report by Brian Gavitt, Research Assistant. Mike Fitzgerald of M-Vision, a computer consulting firm, provides computer programming support. The AOEC staff and GWU staff work together with the computer consultant on database software development and enhancement.

Twelve AOEC member clinics have contributed cases of occupational or environmental disease or injury to this 1997 – 2000 report. To be included in the Database, a case must have at least one diagnosis that is related to an occupational or environmental exposure. The AOEC accepts cases with two types of diagnosis/exposure relationships for inclusion in the Database. The predominant type of diagnosis/exposure relationship is "probable or definite", where, in the physician's judgment, the diagnosis is more than 50% likely to be causally related to occupational or environmental exposure(s). This criterion was established jointly by AOEC Database Committee members and NIOSH; "causally related" includes cases in which the occupational or environmental exposure is the sole cause of a condition as well as cases in which the occupational

or environmental exposure exacerbates an existing condition. ("Probable" and "definite" are not distinguished in the AOEC Database.)

The second type of diagnosis/exposure relationship is "possible." Since late 1992, the AOEC Database has included cases with diagnoses which the physician believed might have been caused or exacerbated by occupational or environmental exposure(s), but for which there was insufficient evidence to meet the 50% criterion. This report also includes data on "possible" cases.

Cases are submitted to the AOEC office in one of two formats: (1) on case report forms (see form following this text); or (2) on diskette, using a custom-designed software package which provides records in a DBASE IV format. All Database fields with limited coding possibilities have pop-up help screens and range-checks designed to provide the proper codes and ensure that required fields are not left blank. The AOEC Database utilizes Standard Industrial Classification (SIC) and Standard Occupational Classification (SOC) codes to describe the industry and occupation in which work-related exposure(s) occurred. International Classification of Diseases, 9th Revision (ICD-9) codes are used to classify diagnoses. A hierarchical classification scheme developed by Katherine Hunting and Susan McDonald is used for coding occupational and environmental exposures. SIC code, union code, exposure code, and diagnosis code look-ups have been integrated into the AOEC Database software. AOEC encourages clinics to use the case-reporting software whenever possible. Participating clinics do a variable amount of coding, depending on their own resources and expertise, with the remainder of the coding done in the AOEC office.

It is worth noting that the AOEC requests consult-level cases from member clinics, and asks clinics to exclude screening cases unless they have had full clinical followup. Also, a number of clinics are seeing large numbers of patients with acute occupational injuries, and these cases are not included in the AOEC Database unless they require more extensive followup at the member clinic. Finally, the AOEC Database excludes the following types of cases which do not have an occupational or environmentally-related diagnosis:

- post-exposure evaluations with diagnoses of healthy physical, etc.;
- cases who have received counseling regarding the potential risks of exposures;
- cases with valid diagnoses which are unrelated to any occupational or environmental exposures;
- cases with valid diagnoses thought to be caused by occupational or environmental factors, but where the exposure is unknown;

Although these types of excluded cases are not cataloged centrally in the AOEC Database, member clinics can keep track of these cases in their individual clinic databases (as "clinic-only cases").

Organization of this Report

This report provides a summary of case reports submitted by participating clinics for 1997 through 2000. Inclusion of cases is based on a date of diagnosis during this time period. Following this introduction, the report is organized into five sections, each with accompanying tables and graphs:

- Summary of all cases with diagnoses related to occupational or environmental exposures (this section summarizes all the data that will be described in the four detailed sections that follow);
- Description of cases related to occupational exposures other than asbestos;

- Description of cases related to asbestos exposure;
- Description of cases related to environmental exposures;
- Description of cases possibly related to occupational or environmental exposures.

II. SUMMARY OF ALL CASES, 1997 – 2000 (N=3,929)

Overview

In 1997 to 2000, the participating clinics reported 3,929 cases which had at least one diagnosis related to (or possibly related to) one or more occupational or environmental exposures. These cases are profiled in the first set of tables and graphs. Table S-1 shows that 2,063 cases (52.2%) had asbestos-related diagnoses, while 10 cases had diagnoses that were *possibly* related to asbestos. The proportion of reported cases related to asbestos has increased since the 1991 inception of the AOEC Database, from twenty-three percent the first year to well over fifty percent for the years 1995, 1996, 1998, and 2000. These cases represent a significant proportion of the care being delivered by AOEC member clinics and reflect the burden of disease that remains from historical exposures to asbestos. Almost all of the asbestos exposures were occupational.

During 1997 to 2000, 2,496 cases (63.5% of total) had diagnoses related to exposures other than asbestos. While most non-asbestos cases were related to occupational exposures, 8.6% of these cases had one or more diagnoses related to environmental exposures. This report also includes information on 243 cases with diagnoses *possibly* related to occupational or environmental exposures (including asbestos).

It is important to point out that 874 cases had diagnosis-exposure relationships counted in more than one of the categories discussed above. Nearly 800 of these cases were submitted in 1999 and 2000 by one participating clinic and had a diagnosis of noise-induced hearing loss as well as a diagnosis related to asbestos. This explains why the category totals listed in Table S-1 sum to more than 3,929 cases.

Demographics

Figure S-1 shows the number of cases submitted to the AOEC Database by quarter of diagnosis since its inception in January 1991, while Table S-2 presents data on case submission by clinic, as well as some demographic characteristics of the patients. The number of cases diagnosed per quarter (Jan – Mar, Apr – Jun, Jul – Sept, Oct – Dec) was relatively constant from January 1991 to mid-1994. After then, case-counts appear more variable. Several of clinics have participated in the Database project for all or most of last ten years, while others have participated only in latter years. Others have become inactive and are no longer submitting cases. This change in "clinic mix" over time no doubt accounts for changes in the types of patient referral patterns, demographics, industries and occupations, exposures, and diagnoses seen over time. The twelve participating clinics for 1997 to 2000 represent diverse geographic areas of the U.S., but do not by any means represent the entire U.S. One large clinic, St. Lawrence Hospital (SLH) in Michigan contributed half of the cases for this report (this was also true for the 1994 to 1996 time period). Four other clinics (Massachusetts Respiratory Hospital, George Washington University in Washington DC, Cook County Hospital in Illinois, and Robert Wood Johnson in New Jersey) contributed another 36% of the 1997 to 2000 cases. The large number of asbestos screenings and

resulting patient followup visits at the St. Lawrence clinic have markedly influenced the overall Database case characteristics since 1995, as described below.

The median age of all the patients was between 40-49 years in 1994, but has been in the range of 50-59 years since 1994. Since 1995, three-fourths of the patients have been male; higher than in previous years. The proportion of known union members among the occupationally-related cases represented in the Database is only about 11%. However, the proportion of occupational cases in which union membership status was unknown is so high (71%) as to make any conclusions about union membership unreliable.

Figure S-2 shows the ethnicity of the AOEC Database cases for 1997 to 2000. Most (60%) of the cases were white, with 25% black, 7% Hispanic, and the remainder unknown or from other ethnic minority groups. The proportion of patients from racial/ethnic minority groups is fairly similar to that seen between 1994 and 1996. Since 1994, there has been a greater representation of racial/ethnic minority groups among AOEC Database cases.

Figure S-3 presents data on referral source for all 3,929 cases. During 1997-2000, 59% of cases were referred to AOEC clinics by attorneys, 20% by physicians, 8% were self-referred, and 4% were referred by employers. In contrast, at the inception of the Database in 1991, attorney-referred patients comprised only 20% of the AOEC cases. In addition to the increasingly litigious nature of occupational and environmental medicine, this pattern also reflects the changing mix of clinics which are reporting AOEC cases, and the increasing proportion of cases related to asbestos. The one-fifth fraction of physician-referred cases for the most recent four years is a modest increase over the 15% fraction seen in 1994 to 1996.

Figure S-4 illustrates job status for the 3,712 cases related to occupational exposures. Forty-seven percent of the patients were employed at the time of their diagnosis, while 33% were retired, 14% were disabled, and 5% were unemployed. The job status of the occupational cases is very similar to that seen in 1995 and 1996. However, the proportion of employed cases had decreased since the early years of the Database, offset by increases in the proportions of retired and disabled cases. Again, the proportional increase in asbestos-related cases during 1995 to 2000 has influenced these trends.

Table S-3 summarizes the industries in which the 3,712 occupational cases were employed. The most common industry sector was manufacturing, accounting for 52.9% of cases, followed by services (15.5%), and construction (12.4%), and transportation, communication, and utilities industries (7.9%). The distribution of AOEC cases by industry sector has fluctuated considerably between 1991 and 2000. The 3,712 occupational cases held a wide variety of jobs, as illustrated in Table S-4. More detailed data on occupation and industry will be presented in the next two sections.

Table S-5 presents data on union membership for the 358 patients whose diagnoses were related to occupational exposures and who were known to be union members. However, because of the poor quality of our reported union data, these numbers should not be considered representative of the actual distribution of union membership among AOEC clinic patients.

Exposures

Each case report describes up to three exposures which may have caused or contributed to as many as three diagnoses. Among the 3,929 patients with occupational or environmental disease and injury, 4,778 hazards were reported to be related to one or more diagnoses. More than one hazard can be recorded per diagnosis -- for instance, a clinic seeing a clerical worker with carpal tunnel syndrome might list both repetitive motion and keyboard use as contributing to the problem. Table S-6 is a frequency distribution of these hazards; the percentages reflect the percent of all 4,799 hazards cited (rather than the percent of all 3,929 cases). The hazard codes are organized by exposure groups; individual exposures are included under each group. The most frequently reported hazard was asbestos (2,063 cases), followed by noise (877 cases), indoor air pollutants (155 cases), keyboard use (129 cases), repetitive motion (85 cases), crystalline silica (84 cases), lifting (76 cases), solvents NOS (74 cases), falls (61 cases), smoke NOS (60 cases) and inorganic lead (57 cases). The long list of hazards emphasizes the variety of exposures experienced by the AOEC patient population. The remarkable increase in cases related to noise was seen as a result of targeted screening and followup programs at St. Lawrence Hospital (most of these patients also had asbestos related conditions. A more detailed discussion of hazards will follow in each of the subset data analyses.

III. CHARACTERISTICS OF CASES RELATED TO OCCUPATIONAL EXPOSURES OTHER THAN ASBESTOS (N=2,315)

Demographics

The majority of the 2,315 cases related to occupational exposures other than asbestos were white, male, and over fifty. However, the demographic profile of this group of patients is markedly affected by 862 cases of noise-induced hearing loss which were diagnosed at SLH in 1999 and 2000 as part of a screening program that also targeted asbestos-exposed workers. (In fact, the demographics of this subgroup look very much like the demographics of the cases with asbestos-related diagnoses, which are summarized in Section IV.) Therefore, because some may find it of interest, we will summarize selected demographic characteristics of the two subgroups separately in this text. Readers can refer to Figures O-1 through O-3 and to Table O-1 for the overall summary of all cases with non-asbestos-related occupational disease.

As seen in text Table T-1 (next page), the 862 SLH patients diagnosed with noise-induced hearing loss in 1999 and 2000 were predominantly white (70.4%), retired (55.3%), men (97.3%), over 59 (58.6%), who were referred to the clinic by an attorney (99.1%).

In contrast, the remaining 1,453 patients diagnosed with non-asbestos-related occupational conditions at AOEC clinics during the time period 1997 to 2000 were younger, more ethnically diverse, gender-balanced, more likely to be working, and more likely to be referred to the AOEC clinic by another physician. Table T-1 shows that 35% of the patients were less than 40 years of age, and two-thirds were less than 50 years of age. Based on this analysis, the proportion of patients younger than 40 in the non-asbestos occupational group has decreased slightly since the inception of the Database. Between 1997 and 2000, there were slightly more male than female patients in this subset of cases, which is quite similar to results from previous years. By ethnic/racial group, 58% were white, 23% Black, and 7% Hispanic – very similar to the distribution seen for this group in 1994 to 1996. Two-thirds of this case group were employed at the time of their diagnosis, while 17% were disabled, and 8% were unemployed, and 6% were

Table T-1. Comparison of Demographic Characteristics for SLH Noise-Related Cases Diagnosed in 1999 and 2000 Versus All Other 1997 to 2000 Cases Related to Occupational Exposures Other than Asbestos.

	SLH Noise Cases '99-'00 (N=862)	All Others, 1997 – 2000 (N=1,453)	Total (N=2,315)
Age			
<20	--	0.3%	0.2%
20-29	--	9.0%	5.7%
30-39	0.2%	25.7%	16.2%
40-49	8.0%	31.5%	22.8%
50-59	33.2%	22.6%	26.5%
60+	58.6%	10.8%	28.6%
Gender			
Male	97.3%	52.7%	69.3%
Female	2.7%	47.3%	30.7%
Ethnicity			
Asian/Pacific Islander	0.1%	1.7%	1.1%
Black	20.7%	22.8%	22.2%
Hispanic	2.9%	7.2%	5.6%
Native American/Aboriginal	0.5%	0.2%	0.3%
White	70.4%	57.8%	62.5%
Other	0.4%	3.0%	2.2%
Unknown	5.1%	7.3%	6.3%
Referral Source			
Attorney	99.1%	18.8%	48.7%
Employer	--	9.4%	5.9%
Government Agency	--	4.5%	2.8%
Physician	0.1%	41.8%	26.3%
Self-Referred	0.8%	13.2%	8.6%
Union	--	1.3%	0.8%
Other	--	6.7%	4.2%
Unknown	--	4.1%	2.6%
Job Status			
Employed	30.4%	67.5%	53.7%
Retired	55.3%	6.2%	24.5%
Disabled	11.8%	16.9%	15.0%
Unemployed	1.4%	8.3%	5.7%
Unknown	1.0%	1.0%	1.0%

retired. Based on this subgroup alone, the proportion of employed patients has decreased slightly since 1991. In the latest four years, referral sources were diverse, with the largest group (42%) referred to AOEC clinics by other physicians, while 19% were referred by attorneys, and 13% were self-referred. There has not been a consistent pattern of clinic referral sources since 1991.

Table O-1 and Figures O-1, O-2, and O-3 present overall demographic data on the non-asbestos case group. Fifty-five percent were aged 50 and above, while 69% were male. Regarding ethnicity (Figure O-1), 63% were white, 22% were black, and 6% were Hispanic, with smaller proportions falling into other categories. The most frequent source of referral to AOEC clinics for patients with non-asbestos-related occupational illnesses (Figure O-2) was attorneys (48%), followed by other physicians (26%), self-referrals (9%), and employers (6%). Most of the case group (53%) were employed at the time of their diagnosis, while 15% were disabled, and 25% were retired (Figure O-3). Comparison to previous years (somewhat higher percent white, and markedly older, more male, more retired and more referred by attorneys) is greatly influenced by the 862 cases from 1999 and 2000 with noise-induced hearing loss.

Data on industry for the 2,315 cases related to occupational exposures other than asbestos are presented in Table O-2. Employment information is presented for the job in which the exposure occurred -- either the current job, or a past job. Forty-two percent (979) of the patients received their exposures in manufacturing jobs – predominantly in the primary metal (336 cases), transportation equipment (210 cases), and fabricated metal product (204 cases) manufacturing industries. (More than half of the manufacturing cases related to exposures other than asbestos came from the SLH noise-induced hearing loss case series.) Twenty-two percent (514) of these patients received their exposures in the services industry, including 160 health service workers (6.9%) and 131 educational services workers (5.7%). The proportion of AOEC cases employed in the service sector was lower in the last four years compared to 1994 to 1996, but was comparable if the SLH noise case series is omitted. The construction industry accounted for 11.5% of the cases, over 60% of these from the SLH noise case series. Two-hundred-and-two patients (8.7%) were employed in the transportation, communications, and utilities sector. Half of these (101 cases) were railroad transportation workers, many of whom were diagnosed with noise-induced hearing loss.

The next table (O-3) presents complementary data on occupation. It is clear from this table that AOEC clinics are treating workers from a wide variety of occupations, and that no single occupation dominates the cases related to hazards other than asbestos. Except for handlers, equipment cleaners, helpers and laborers (529 cases, 22.9%), construction occupations (285 cases; 12.3%), and production working occupations (316 cases, 13.7%), fewer than 10% of patients belonged to any one occupational category. Looking at specific occupations rather than broader categories, the most frequently represented jobs among these cases (each with at least 2% of the 2,315 cases) were: freight, stock and material movers – hand (245 cases); miscellaneous manual occupations (209); assemblers (82); plumbers, pipefitters, and steamfitters (68); machine operators and tenders (66 cases); cleaning and building service occupations (61); teachers (60); precision metal workers (58); registered nurses (58 cases); construction laborers (54); miscellaneous mechanics and repairers (53); and electricians and power transmission installers (49). Note that patients who experienced their exposure(s) as students are classified with the appropriate occupational group (e.g., music student with musicians, medical student with health care workers) or as "student, NOS", unless the exposure was clearly environmental in nature or unless the student was a child.

From 1997 to 2000, 11.9% of the individuals with non-asbestos occupational exposures were known to belong to unions (Table O-1). Union status was unknown for almost two-thirds of the cases; AOEC clinics are apparently not recording this information routinely in patient medical charts. Table O-4 lists a large number of different unions for the 275 non-asbestos cases known to

be union members. The most frequently included unions are those representing automobile workers/aerospace/agricultural implement workers (62 cases); nurses (19), and educators (13).

Exposures

For each patient, the Database records up to three exposures which may have caused or contributed to as many as three diagnoses. Among the 2,315 patients with occupational illnesses or injuries not related to asbestos, 2,507 hazards were reported in relationship to the diagnoses. Table O-5 lists the frequency for each hazard; the percentages reflect the percent of all 2,507 hazards (rather than the percent of all 2,315 cases). Each reported hazard for a case is listed only once in this table, even if it is related to more than one diagnosis. The variety of exposures is notable. Only six major categories accounted for a substantial proportion of the hazards: "Physical Factors" (predominantly noise) accounted as a group for 41.2% of hazards; "Ergonomic Factors" accounted for 14.1%; "Miscellaneous Chemicals and Materials, Referenced by Use" accounted for 11.0%; "Mineral and Inorganic Dusts" for 6.3%; "Hydrocarbons" for 5.0%; and "Metalloids" for 4.5%. Each of the other categories accounted for less than 3% of related hazards. With the noise-related exposures from the SLH screening program comprising such a large fraction (35%) of total hazards, the other exposures necessarily comprise smaller fractions of the total. Some interesting features of the related hazards will be described in the following sections.

Ergonomic and Physical Hazards

Noise exposure (877 cases; 35% of hazards) was the single most common hazard (other than asbestos) reported in relationship to occupational disease or injury – in this case, noise-induced hearing loss. Almost all of these patients were diagnosed at SLH. Their noise exposures came predominantly from jobs in primary metals manufacturing (30%), construction (20%), fabricated metals manufacturing (17%), transportation equipment manufacturing (13%), and railroad transportation (10%).

Falls (61 cases) and acute trauma, NOS (35 cases) were other frequented cited "Physical Factors" hazards. These results are similar to those seen in the 1994 to 1996 report, indicating that participating occupational and environmental medicine clinics do continue to evaluate a small but consistent number of workers with traumatic injuries.

Altogether, 353 (14.1%) of the reported hazards were ergonomic factors. In this category, keyboard use (129 cases), repetitive motion (84 cases), and lifting (76 cases) were the most frequently reported hazards. It is interesting to profile the patients affected by these hazards. Predictably, the patients with disorders related to keyboard use held a variety of managerial, technical/professional, and administrative jobs. Two-thirds were employed with service-sector companies – most commonly educational organizations, research/accounting/management services, membership organizations, or law firms. They were young – two-thirds under age 40 and median age 36. They were almost all employed at the time of their diagnosis, and were mostly female (67%), white (61%), and either self-referred (26%) or referred to the AOEC clinic by other physicians (31%). About 80% of these cases were diagnosed at the GWU clinic, located in downtown Washington DC, which no doubt influenced their employment mix.

In contrast, the patients with diagnoses related to repetitive motion (84 cases) or lifting (76 cases) had quite different employment and demographic characteristics. They were: older (median age 44 for repetitive motion, 38 for lifting); more likely to be Black or Hispanic (52% for repetitive

motion, 67% for lifting). While three-fourths of those with repetitive motion disorders were female, only 41% of those with lifting injuries were female. The patients with repetitive motion disorders held mostly blue-collar jobs, in a striking variety of service sector (44%), manufacturing (27%), and other jobs. The 76 patients with injuries caused by lifting were also quite diverse in their occupations. In addition to several patients from miscellaneous materials handling occupations, there were six patients from each of the following occupations: cashier/sales clerks, food service workers; housekeeping/janitorial workers; and, health care workers in direct patient care jobs. Three-fourths of this group were diagnosed at the GWU clinic, while nearly half of those patients with repetitive motion disorders were diagnosed at the Cook County Hospital clinic.

Chemical and Biological Hazards

There are hundreds of chemical and biological exposures referenced in the AOEC exposure coding system; occupational disease case reports for 1997 to 2000 reference over 200 separate exposures in these subgroups. Continuing the pattern seen among cases diagnosed from 1994 to 1996, the non-specific exposures, "air pollutants, indoor", were responsible for the largest number of cases related to non-physical hazards (144, 5.7% of all non-asbestos occupational hazards cited). These patients worked predominantly in three industries – in education (53 cases, mostly teachers) and in health care (29 cases, mostly registered nurses), and in public administration (28 cases, many occupations). It should be borne in mind that "indoor air pollutants" is a non-specific designation, and the causal agents could be chemicals, molds, or other biological hazards. Numerous other cases (not discussed here) were related to specified indoor air pollutants such as mold, or unspecified indoor air pollutants such as perfumes, solvents NOS, and dust NOS.

Eighty-three patients seen in participating AOEC clinics between 1997 and 2000 had diagnoses (primarily silicosis) related to crystalline silica exposure. These exposures had occurred most often in foundry jobs (63 of the 83 cases) and in construction. All of the workers were men and most were either retired (59%) or disabled (24%). Since 1994, approximately 20 patients with silica-related diseases have been reported per year by participating clinics to the AOEC Database. The 26 patients with coal-related diseases (almost all pneumoconioses) were similarly of older ages and almost all disabled or retired. They were all coal miners.

Fifty patients were diagnosed with lead poisoning or other conditions related to exposure to inorganic lead. Nearly half of these cases occurred were construction workers, primarily painters. In addition, there were a few cases each seen in: primary metals manufacture; metal fabrication; corrections officers; hazardous materials abatement workers; and motor vehicle manufacturing. Lead poisoning is well-recognized and preventable, considered by NIOSH to be a sentinel health event where a single case should trigger an investigation of the worksite; reporting of lead-related cases has not abated since the inception of the AOEC Database in 1991.

A few specific exposures which occurred primarily in the manufacturing sector were cited frequently from 1997 to 2000. Thirty-seven patients were diagnosed with conditions related to diisocyanates (fewer than in the 1991 – 1993 report, but considerably more than in 1994 – 1996). Eight of these patients worked in motor vehicle manufacturing, 6 in the manufacture of sports and athletic goods, and a few in body shops or paint manufacturing. Cutting oils were responsible for the illnesses of 26 patients; 80% of these were among machinists and various other workers in motor vehicle manufacturing. Finally, 25 patients had conditions attributed to paint exposures – half from manufacturing. It was interesting that only 11 of these 25 individuals were working specifically as "painters."

Non-specified smoke exposures were responsible for the illnesses of 52 patients. The largest number of these were firefighters (22), followed by motor vehicle manufacturing (5) and construction (4).

Twenty-four female health care workers – 22 nurses and 2 medical technicians – had conditions related to latex gloves or other natural latex products. Most were diagnosed at Massachusetts Respiratory Hospital.

Solvent exposure, NOS (not otherwise specified) accounted for 60 cases of occupational disease. Although this is a relatively large group, it's analysis is not very informative because of the general nature of the exposure and the fact that no more than five individuals were from any one industry or occupational group.

Diagnosis/Exposure Relationships

The most valuable contribution of the AOEC Database is to provide information on diagnosis/exposure relationships. Table O-6, which details approximately 2,800 of these relationships (for occupational exposures other than asbestos), is therefore the heart of this report. Musculoskeletal conditions and respiratory diagnoses and were the disorders most frequently diagnosed in 1997 through 2000 by participating clinics.

The AOEC Database allows physicians to report up to three diagnoses for each case, although in most cases fewer diagnoses are made. Among the 2,315 individuals included in this non-asbestos, occupational subset of the AOEC data, most had only one related diagnosis. In total, there were 2,617 diagnoses related to hazards other than asbestos. Since each diagnosis can be related to as many as three hazards, there are (in theory, though none in this group of cases) as many as nine diagnosis/exposure relationships. The 2,617 diagnoses, in relationship to the 2,507 non-asbestos occupational hazards described in Table O-5, yielded about 2,800 diagnosis/exposure relationships for analysis. Table O-6 is organized into diagnosis groups and individual diagnoses, and for the most part follows ICD-9 codes. In some cases, particularly with respiratory diseases and musculoskeletal disorders, we have grouped similar diagnoses across ICD-9 codes for analysis. For each diagnosis listed in the table, we give the percent of all cases who had this diagnosis. The diagnosis group total represents the number of diagnoses in the group. We do not list a corresponding percentage for these groups, since a case may have more than one diagnosis in a group and such a percentage would overestimate the proportion of cases in the category. (For example, a patient diagnosed with both occupational asthma and chronic rhinitis would be double-counted in the diagnosis group "Respiratory Disorders.") This same principle applies in a number of the other diagnosis/hazard relationship tables where summary percentages are not presented.

Because the essence of Table O-6 is in the detail, it is impossible to succinctly summarize the data. Rather, the reader should examine the table, focusing on the diseases and exposures that are of most interest to him or her. The highlights of the table are as follows. Thirty-eight percent of the individuals with occupational conditions related to exposures other than asbestos had noise-induced hearing loss (NIHL - 877 cases). These cases have already been discussed. Respiratory diagnoses (640 diagnoses) accounted for one-quarter of the 2,617 diagnoses in this group. Two hundred and seventy-four (11.8%) of the 2,315 individuals with non-asbestos occupational diseases were diagnosed with asthma, making it (after asbestosis and NIHL) the third-most common diagnosis made by participating AOEC clinicians from 1997 to 2000. RADS accounted

for an additional 36 diagnoses (1.6% of cases). We combined sinusitis, rhinitis, pharyngitis, laryngitis, and symptoms of upper airways irritation (either "chronic" or not specified whether acute or chronic) into a single category for this report. Patients treated in participating AOEC clinics were frequently diagnosed with these problems; 124 workers (5.4% of non-asbestos occupational cases) were treated for these conditions. Silicosis (72 cases) was the next most common non-asbestos-related respiratory diagnosis made among participating AOEC clinics from 1997 to 2000.

Musculoskeletal conditions (558 diagnoses, 21.3% of non-asbestos, work-related diagnoses) were also frequently diagnosed among AOEC clinic patients. Upper extremity problems predominated, accounting for about 45% of the diagnoses in this category. In particular, carpal tunnel syndrome (75 cases, 3.2% of non-asbestos, work-related cases), tendinitis, tenosynovitis, or bursitis of the forearm, wrist, hand, or fingers (51 cases, 2.2%), sprains, strains, or tears of the wrist/hand/fingers (35 cases, 1.5%), and epicondylitis (32 cases, 1.4%) were diagnosed frequently. Shoulder problems (61 cases) are detailed in a separate category. Low back problems were also common, accounting for nearly a quarter of the musculoskeletal diagnoses. The most common diagnoses were sprains, strains, or tears of the lower back/back NOS (75 cases, 3.2%), and low back pain (33 cases, 1.4%).

Other common problems diagnosed by AOEC clinics during the period of this report included: symptoms and ill-defined conditions (122 diagnoses, including 48 cases of sick building syndrome; chemical poisonings and syndromes (105 diagnoses, including 42 related to lead); skin disorders (76 diagnoses); and, multiple chemical sensitivity (70 diagnoses).

To present a cumulative summary of the most frequent occupational conditions diagnosed among participating AOEC clinics, we have combined case reports from 1991 to 2000. Diagnoses seen among at least 1.5% of the 5,639 patients with occupational exposures other than asbestos, along with the most commonly related hazards, are listed in Table T-2 on the next page. These 1991-2000 summary data allow us to maintain a historical perspective, even though this report examines in detail only the past four years' cases. Not surprisingly, respiratory and musculoskeletal diagnoses predominate. Patients with noise-induced hearing loss, multiple chemical sensitivity, sick building syndrome, chemically-induced headaches, poisonings by lead and solvents, dermatitis, and solvent-related toxic encephalopathies were also frequently seen by participating clinicians. One trend that emerged in 1994 and continues to be evident is the relationship of natural latex gloves and other latex products as an important cause of both asthma and dermatitis.

Multiple chemical sensitivity (MCS) has been the subject of controversy for several years among occupational/environmental disease specialists. From 1991 to 2000 (cumulative), the Database includes reports of 170 occupational cases with this diagnosis, and another 76 cases related to environmental hazards, plus 19 possible cases (1994-2000 only). Because diagnosis and labeling of this condition vary from clinician to clinician, there are no doubt additional similar cases whose diagnoses refer to non-specific symptoms (e.g., headache, breathing difficulties, upper respiratory irritation) rather than to "MCS."

The AOEC clinics are continuing to treat many patients with occupational lung disease. While Table O-6 lists the causal or contributing exposures by diagnosis group, Table O-7 highlights respiratory diagnoses, organized by exposure. In this way, the burden of respiratory disease

Table T-2 - Diagnoses Made in at Least 1.5% of the Occupational Non-Asbestos Cases (N=5,639 cases), with the Most Commonly Related Hazards, 1991 to 2000 – Cumulative

Diagnosis	# of Cases	(% of Cases)	Commonly Related Hazards - Frequency
Respiratory (1,427 of 1,840 diagnoses)*			
Asthma	690	(12.2)	air pollution, indoor - 130 isocyanates, all - 71 dust, NOS - 49 solvents, NOS - 46 smoke, NOS - 33 latex, natural rubber -30
Upper Respiratory Irritation (Chronic or NOS)	432	(7.7)	air pollutants, indoor - 133 solvents, NOS - 37 mold - 23 dust, NOS - 22
Reactive Airways Disease (RADS)	157	(2.8)	isocyanates, all - 16 air pollutants, indoor - 13
Silicosis	148	(2.6)	silica, crystalline - 144
Musculoskeletal (920 of 1,810 diagnoses)			
Carpal Tunnel Syndrome/ Median Nerve Neuropathy	331	(5.9)	repetitive motion - 170 keyboard use - 149
Tendinitis/Tenosynovitis/Bursitis of Forearm, Wrist, Hand, or Fingers	190	(3.4)	keyboard use - 119 repetitive motion - 48
Epicondylitis	161	(2.9)	keyboard use - 116 repetitive motion - 32
Sprains/Strains/Tears of Lower Back/Back, NOS	147	(2.6)	lifting - 55 fall - 35
DeQuervain's disease	86	(1.5)	keyboard use - 40 repetitive motion - 36
Unspecified Cumulative Trauma Disorders or Musculoskeletal Pain, Upper Extremity	85	(1.5)	keyboard use - 46 repetitive motion - 36
Sensory Organ Disorders (908 of 962 diagnoses)			
Hearing Loss	908	(16.1)	noise - 905
Symptom-Defined & Misc. Syndr. (438 of 609 diagnoses)			
Multiple Chemical Sensitivity/ Acquired Chemical Intolerance	170	(3.0)	air pollutants, indoor - 54 solvents, NOS - 15 pesticides, all - 13
Sick Building Syndrome/Other Gen'l Symptoms	158	(2.8)	air pollutants, indoor - 115
Headache (Chemical or NOS)	110	(2.0)	air pollutants, indoor - 25 solvents, NOS - 15
Chemical Poisoning Syndr. (290 of 412 diagnoses)			
Toxic Effect of Lead	165	(2.9)	inorganic lead - 162
Toxic Effect of Solvents	125	(2.2)	solvents, NOS - 46 toluene - 18 xylene - 11
Skin Disorders (204 of 255 diagnoses)			
Dermatitis, All	204	(3.6)	latex, natural rubber - 43 solvents, NOS - 17 lubricants, NOS - 12
Psychiatric & Neurological (165 of 387 diagnoses)			
Toxic Encephalopathy	165	(2.9)	methyl chloroform - 77 perchloroethylene - 74 solvents, NOS - 45

*Numbers in parentheses represent cases with specific diagnoses listed in table, out of total number of diagnoses in category.

related to each exposure or exposure category can be readily seen. Of the 640 respiratory diagnoses, 173 were related to hazards in the category "Miscellaneous Chemicals and Materials, Referenced by Use," 143 to various "Mineral and Inorganic Dusts," 86 to the category "Hydrocarbons, NOS," and 55 to "Pyrolysis Products". The hazards most commonly cited in relationship to respiratory diagnoses were: air pollutants, indoor (102 related diagnoses); crystalline silica (82); smoke NOS (46); solvents, NOS (33); chemicals, NOS (32); isocyanates, NOS (24)/various diisocyanates (8); coal (28); dust, NOS (24); paint (21); cutting oils (21); mold (19); welding exposures (12); and, latex, natural rubber (11). This is the first reporting period where smoke exposures accounted for a substantial fraction of respiratory illness.

Chan-Yeung and Malo (in Asthma, Barnes et al. (eds.), Raven Press, 1997) have reviewed substances that have been reported to induce occupational asthma. The NIOSH Asthma Sensor Program has designated a few additional exposures as known asthma-inducers. These substances are designated with special codes in the AOEC exposure coding system, and are marked with asterisks (* or **, see footnotes) in Table O-7. Several known asthma-inducers (e.g., isocyanates, cutting oils, latex, glutaraldehyde, formaldehyde) were responsible for significant numbers of cases of asthma or RADS. However, it is interesting to note that 262 of the 359 substances reported during 1997 to 2000 by expert AOEC clinicians to cause or exacerbate asthma or RADS are not recognized as known asthma-inducers.

These AOEC surveillance cases, in combination with surveillance data collected by the NIOSH SENSOR states, are valuable for identifying emerging occupational respiratory disease risk factors. The non-specific identification of many of the "non-listed" hazards – for example: solvents, NOS; dust, NOS; and air pollutants, indoor – is problematic because we don't know the precise causal exposures. An AOEC specialist treating an asthma patient would evaluate whether known asthma-inducers were present in the worker's environment and could explain the diagnosis. Therefore, the "non-listed" hazards, especially when reported by two or more AOEC clinics, are worthy of increased attention and evaluation for their asthma-inducing potential. For example, solvents classed as aliphatic and chlorinated hydrocarbons are not generally recognized as asthma inducers. AOEC clinicians, however, diagnosed twenty four workers with asthma related to unspecified or multiple solvents, and several more cases related to specified solvents in these categories. These exposures occurred in a variety of industries, including plastics manufacturing, commercial printing, construction, railroad, and chemical manufacturing. One challenge to AOEC clinics will be to precisely identify and report the solvents that are causing these illnesses.

The AOEC exposure coding scheme identifies organic solvents as a class. Although "solvents, NOS" was the most frequently listed exposure in this class, many specific solvents, including aliphatic and alicyclic hydrocarbons, aromatic hydrocarbons, alcohols, ketones, and halogenated aliphatic hydrocarbons, were reported in relationship to AOEC diagnoses. Organic solvents were reported as causal or contributing hazards for 142 (6.1%) of the 2,315 patients with diagnoses related to non-asbestos occupational exposures. Table O-8 summarizes the 161 diagnoses related to specific occupational solvent exposures. More than half of the solvent-related diagnoses were respiratory, especially asthma and upper respiratory irritation. Also, many clinics reported solvent-related illnesses and syndromes without providing specific diagnoses; these 22 cases are listed as "toxic effects of solvents." Solvents as an exposure class contributed to a substantially smaller proportion of occupational disease in this report (1997 to 2000), compared to earlier reporting periods.

Table O-9 provides parallel information on the 21 patients with diagnoses related to occupational pesticide exposures. Of the 22 diagnoses made in this group, respiratory disorders were most common. Altogether, pesticides caused or contributed to the diagnoses of 0.9% of the 2,315 patients with diagnoses related to occupational exposures other than asbestos.

IV. CHARACTERISTICS OF CASES RELATED TO ASBESTOS (N=2,057)

In 1997 through 2000, the participating AOEC clinics treated 2,057 patients with asbestos-related diagnoses. (Approximately 800 of these 2,057 asbestos cases also had diagnoses related to other exposures and were also been included in other sections of this report.) Because the asbestos case series differed from patients with other occupational exposures, we analyzed them separately. Table A-1 and Figures A-1 through A-3 describe the demographic characteristics of the asbestos cases. This patient population was markedly different than the cases related to non-asbestos exposures. Notably, they were older, more male, less likely to be employed, and more likely to have been referred to the AOEC clinic by an attorney. These differences are even more apparent if the noise-related cases are omitted from the case series related to other occupational exposures (Table T-1).

The 2,057 individuals with asbestos-related diseases were 98% male, and 55% were 60 years of age or older (Table A-1). As seen in Figure A-1, they were predominantly either white (60%) or black (29%). All but two of the patients with asbestos-related diseases received their exposures on the job (and one had environmental as well as occupational asbestos exposure). Of these, 55% were retired at the time of diagnosis, 32% were employed, 11% were disabled (Figure A-3). Ninety-six percent of these patients were referred to the AOEC clinics by an attorney (Figure A-2). Some AOEC clinics conduct asbestos screenings that are sponsored by lawyers or unions, and indeed it can be seen that the vast majority (92%) of the asbestos-related cases were contributed by the St. Lawrence clinic in Michigan. Any screening patients who were followed up and diagnosed with asbestos-related disease would be included in the AOEC Database. These screening programs also influence trends in referral patterns.

Table A-2 summarizes the industries in which the occupational asbestos exposures occurred. The manufacturing sector accounted for the largest share of asbestos cases (73.2%), with 1,123 of the 1,504 manufacturing cases working currently or previously in the primary metal industry. The construction industry accounted for 16.5% of cases. Approximately 7.7% of these individuals were exposed to asbestos in the transportation, communication and utilities industry (most of these were railroad workers). The proportion of manufacturing industry exposures among the asbestos case subset has increased steadily over the last 10 years; this is influenced by clinic mix and targeted screening programs conducted by selected clinics.

The information on occupation in Table A-3 parallels that on industry. Construction occupations (19.3% of cases) and handlers/cleaners/helpers/laborers (44.8% of cases) were the most frequent occupational groups in which exposures occurred. Ten trades accounted for 76% of these 2,055 asbestos cases: laborers (894 cases); plumbers, pipefitters, and steamfitters (125 cases); millwrights (83); assemblers/moulders/pourers/grinders (83); brickmasons (81); electricians (76); core room workers (64); welders/cutters (61); rail transportation occupations (55); and, concrete/plaster/terrazo finishers (48). Union membership was not ascertained for more than 90% of the asbestos worker group. Union affiliations are listed in Table A-4 for those 89 cases known to be union members.

Table A-5 lists the 2,072 asbestos-related diagnoses among these 2,057 individuals. Often, the clinics reported that patients had both asbestosis and pleural disease; in those cases we disregarded the pleural disease. We also disregarded abnormal lung function results in the presence of asbestosis. Ninety-five percent (1,955) of patients with asbestos-related disease were diagnosed with asbestosis. An additional 77 patients (3.7%) were diagnosed with pleural disease in the absence of parenchymal disease. Participating AOEC clinicians attributed eleven cases of respiratory cancer and one case of colon cancer to asbestos.

V. CHARACTERISTICS OF CASES RELATED TO ENVIRONMENTAL EXPOSURES (N =215)

Demographics

The next set of tables and charts describes the 215 cases reported to the AOEC Database for 1997 to 2000 whose diagnoses were definitively related to environmental exposures. This is substantially more cases per year than seen in the 1994 to 1996 report, but comparable to the frequency of environmental disease diagnosed in 1991 to 1993. Environmental exposures include those that occur in a household or community setting, and typically result from indoor air pollution, environmental pollution, toxic spills, or fires. Exposures experienced in these settings have been considered environmental, except for exposures experienced in a household by employed domestic workers. As mentioned earlier, exposures experienced by students were coded as occupational unless environmental exposures were clearly indicated or unless the student was a child.

The individuals with environmental diseases were diagnosed in ten of the twelve participating clinics, as shown in Table E-1, with two of these clinics (Massachusetts Respiratory Hospital and Robert Wood Johnson) reporting the majority of the environmental disease. These cases were similar in age to the occupational cases related to exposures other than asbestos and noise (Table T-1); 35% were less than 40 years of age, and two-thirds were less than 50. Over 60% of the environmental cases were female, a pattern which is also different from that seen with the occupational cases related to both asbestos and to other hazards. As was seen for 1991 through 1996, the proportion of environmental patients belonging to minority groups (Figure E-1) was relatively small. For 1997 through 2000, the ethnic composition was: 81% white; 9% black; and 10% other and unknown.

Figure E-2 summarizes the diverse referral sources for the 215 individuals with conditions related to environmental exposures. Thirty-nine percent of the patients were referred by other physicians, 27% were self-referred, and 17% by attorneys; the remaining 17% of cases were referred by a variety of other sources. The proportion of physician-referred environmental cases has increased from the 1994 – 1996 report, while the proportion of self-referred patients has decreased.

Exposures

Table E-2 details the 253 environmental hazards which were reported in relationship to the diagnoses of these 236 individuals. Twenty-two percent of the related hazards were in the group "Miscellaneous Chemicals and Materials, Referenced by Use" (most commonly: indoor air pollutants - 12 cases; chemicals, NOS – 10 cases; odors – 9 cases). In addition, environmental disease was attributed to solvents, NOS in 16 patients, mold (14 cases), inorganic mercury (12 cases), carbon monoxide (12 cases), environmental tobacco smoke (11 cases), formaldehyde (9

cases), inorganic lead (8 cases), smoke, NOS (8 cases), and dust, NOS (8 cases). No other exposures accounted for more than seven cases. It is of interest that the exposure profile of the environmental cases differed somewhat from that of the occupational cases. Notably, metals and metalloid compounds comprised 11.1% of the reported environmental cases, versus 4.5% of the non-asbestos occupational exposures, similarly, pyrolysis products comprised 9.9% vs. 2.6%. Finally, pesticides made up 7.5% of the environmental hazards, compared to less than 1% of the non-asbestos occupational hazards (see Table E-5 and related discussion, below). As with the occupational exposures, a substantial proportion of the environmental exposures reported were non-specific. We encourage clinics to be more specific whenever possible in the exposures they report.

Diagnosis/Exposure Relationships

Table E-3 presents data on diagnoses and related exposures for the 215 patients whose diagnoses were related to environmental exposures. There were 236 diagnoses made in this group. Of these, respiratory disorders, including asthma (24 diagnoses, 11% of all environmental cases) and chronic or unspecified upper respiratory irritation (27 diagnoses, 13%), were diagnosed most frequently. Multiple chemical sensitivity/acquired chemical intolerance was diagnosed in 33 individuals (15%). Forty-eight of the 236 diagnoses were classified as chemical poisonings or syndromes, with 23 of these diagnoses related to lead or other metals, 10 to carbon monoxide, and 7 to pesticides. Many patients were also diagnosed with symptoms and ill-defined conditions (such as fatigue or headache) related to environmental hazards. For detail on diagnosis-hazard relationships, the reader should examine Table E-3.

There were 32 individuals with 35 diagnoses related to environmental solvent exposure. Table E-4 summarizes their diagnoses; MCS (7 cases) was the single most frequent solvent-related diagnosis. Respiratory disorders and psychiatric/neurological disorders were also seen in this group. Table E-5 summarizes the 20 diagnoses (among 19 individuals) which were related to environmental pesticide exposures. Only one diagnosis appears on the table more than twice: non-specific pesticide poisonings or syndromes (6 cases).

VI. CHARACTERISTICS OF CASES THAT ARE POSSIBLY RELATED TO OCCUPATIONAL OR ENVIRONMENTAL EXPOSURES (N=243)

The overwhelming majority of cases that were reported to the AOEC from 1997 to 2000 were considered by the physician to have diagnoses that were caused or exacerbated by one or more occupational or environmental exposures. However, 243 cases (6.2%) had diagnoses which the physician believed might have been caused or exacerbated by an exposure(s), but for which there was insufficient evidence to say that a causal relationship was more likely than not (the legal criterion used in workers' compensation cases). This number is increased from 1994 to 1996, when only 100 such "possible" cases were reported to the Database. These "possible" cases – where a real diagnosis/exposure relationship is suspected but not reported with confidence – are a valuable means of identifying newly recognized or emerging hazards.

Demographics

In 1997 to 2000, eight of the twelve participating clinics reported 243 cases with possible relationships between exposure and disease. Of these, the majority (205 cases) were exposed to occupational hazards, while 44 cases concerned environmental hazards. (There were a few patients

exposed to both occupational and environmental hazards.) Three clinics (Emory, Robert Wood Johnson, and Cook County Hospital) reported 208 of the 243 cases. (This clinic pattern may reflect a unique patient mix, consisting of many cases with exposure/diagnosis relationships that are not well-established, or it may reflect a varying tendency among physicians to use this "possible" designation.) Given that only 4% of the "possibles" were related to asbestos, the following discussion will compare the possible cases to the previously described cases with definitive relationships to occupational and environmental hazards other than asbestos.

The age distribution of the "possibles" (Table P-1) is similar to that of the previously described occupational and environmental non-asbestos cases. Their ethnic distribution (Figure P-1) is two-thirds white, 17% black, and the remainder other or unknown – intermediate between the other occupational and environmental case series. The gender distribution among the "possible" cases was almost exactly 50/50 (Table P-1) – also intermediate between the other occupational and environmental cases. The referral sources for the "possible" cases were quite similar to that seen for the environmental case series: 41% were referred to AOEC clinics by other physicians; 21% were self-referred; and 16% were referred by an attorney (Figure P-2).

More than half (58%) of "possible" cases were employed at the time of their diagnosis (Figure P-3), and 16% were disabled. A higher proportion of the "possibles" are unemployed (19%), compared to the previously discussed non-asbestos occupational cases. The confirmed union membership rate among the "possible" cases (18.5%) was slightly higher than for other occupational cases (Table P-1); however, this may be because the clinics that reported "possible" cases tended to submit more complete information on union membership status.

A look at Tables P-2 and P-3 reveals the diverse settings where the 205 work-related "possible" cases received their exposures. Thirty percent were employed in manufacturing – most often of chemical products or transportation equipment, but also in many other manufacturing settings. Another 22% were employed in a variety of service sector settings, and 11% each were employed in construction and in the transportation/communication/utilities sector. These individuals held a wide variety of blue-collar, administrative, and technical/professional job titles.

Exposures and Diagnosis/Exposure Relationships

Because the 1997 to 2000 "possible" case series worked in more diverse settings than seen in 1994 to 1996 (when office workers predominated among the "possible" cases), the exposures are correspondingly more diverse for current report. However, as seen in Table P-5, many of the exposures were ill-defined. The most commonly cited exposures were: solvents, NOS (9.9% of hazards); air pollutants, indoor (5.3%); chemicals, NOS (3.6%); asbestos (3.3%), mold, NOS (3.0%); and, coal (3.0%). The most frequent diagnoses (Table P-6) were: asthma (13.2% of cases); upper respiratory irritation, chronic or NOS (7.8%); headache, NOS (6.2%); dermatitis (5.8%); sick building syndrome (4.5%); depression, NOS (4.1%); and MCS (4.1%). Other than coal in possible association with pneumoconiosis, no one exposure was listed in possible association with more than three cases of any one disease.

There were six tumors among these cases. One patient's bladder cancer was possibly related to glycol ethers. Several substances (1,1,2-trichloroethane, asbestos, benzene, butadiene/styrene, chemicals NOS, smoke NOS) were mentioned among possible causes of four cases of non-Hodgkin's lymphoma. Other interesting possible diagnosis/hazard relationships can be seen in the detail of Table P-6. Tables P-7 and P-8 summarize the diagnoses in this subgroup which were

possibly related to solvents and pesticides. The proportion of these possible cases which cite pesticide exposures (13%) is much higher than seen among the non-asbestos occupational cases, and is similar to that seen for the environmental cases.

VII. DISCUSSION

The AOEC Database began in 1991 as a small pilot effort at occupational disease surveillance. From 1991 to 1995, eight to ten clinics participated in the AOEC Database project. This number dropped to 5 clinics in 1996, and has rebounded considerably since then. The number of cases reported per year (approximately 950) has remained relatively steady from 1997 through 2000. Eleven clinics submitted case reports in 2000, the most recent year covered by this report. Case reports from a few of the larger clinics tend to dominate the characteristics of cases in the Database. AOEC Staff have increased outreach efforts to member clinics to encourage Database participation; this continues to be a priority. AOEC has now obtained resources to provide modest compensation to participating clinics, which helps existing participants justify efforts spent in submitting case reports, and which helps the staff to recruit new participants. At this time, the case data cannot be considered a representative sample of either cases seen in all AOEC clinics, or of occupational disease seen in the U.S.

Yet, the data presented in this report illustrate its potential utility as a tool for tracking occupational and environmental illnesses and chronic injuries treated across North America. Cumulatively for 1991-2000, the AOEC Database catalogs information on 9,783 individuals diagnosed with diseases and injuries related to occupational and environmental exposures. The AOEC Database is a ready source of surveillance data for specific questions on types of diseases and exposures being diagnosed in our member clinics. For example, we have observed that most of the substances reported to cause or exacerbate asthma or RADS are not recognized as known asthma-inducers. Thus, AOEC surveillance data could help to identify emerging occupational respiratory disease risk factors.

This report has presented a broad descriptive look at the data for cases with asbestos-related disease, disease related to occupational exposures other than asbestos, environmental disease, and diseases with "possible" relationships to occupational and environmental hazards. There is, of course, much more that could be examined in the AOEC data. For instance, we have taken only a limited look at the link between exposure, disease, industry, and occupation (see Section III). It would be interesting to look in further detail at these patterns, as well as at patterns of exposure or disease by ethnicity or gender. For instance, we have shared data on the characteristics of AOEC asthma and RADS patients with NIOSH investigators to be used in the preparation of manuscripts. The AOEC case reports also provide a means of identifying cases for clinical or epidemiological studies focusing on particular disorders. Interested clinicians and researchers are welcome to contact the AOEC office for information on access to Database information.

The availability of the customized AOEC Database software has enabled more clinics and members to begin entering their own case data, for uploading to the centralized AOEC Database. For several years, participating clinics have had the ability to also include cases in their local databases which do not qualify for AOEC Database inclusion. These "clinic-only cases" are not uploaded to the AOEC Database when clinics submit data to the AOEC office.

A recent Database enhancement includes a computerized look-up utility for diagnosis coding. Diagnosis coding has traditionally been the most challenging quality control issue with the AOEC case reports, and we hope that this coding tool will help to improve the quality of the data.

Another Database limitation is that its relational DBASE file structure has made data analysis difficult. This relational structure includes three linked files: a file containing demographic information (one record for each patient); a file containing hazard information (up to three records for each patient); and a file containing diagnosis information (up to nine records for each patient). The introduction of the DART (Data Analysis and Reporting Tool) utility now enables a broader range of analyses on AOEC data. DART is accessible to participating clinics to use with their own data, as well as centrally for the AOEC Database as a whole.

At AOEC and at GWU, we have continued to make efforts to improve the quality of the data being submitted to and entered into the Database. Besides issues of coding (SIC, SOC, and ICD-9), these quality control issues include provision of: detailed and complete information on both occupation and industry; appropriate and complete diagnoses; appropriate and specific exposure data; and complete information linking each diagnosis to each hazard. Queries to the participating clinics are an integral part of this quality control effort, and we appreciate the willingness of clinics to go back and do more "homework". We also hope that clinics will recognize the importance of reporting specific information on exposures, whenever possible. Hopefully, this will result in the reporting of fewer non-specific exposures (e.g., solvents NOS, dust NOS, hydrocarbons NOS, and pesticides NOS, all of which have been frequently reported in the past).

The issue of quality control as it relates to disease causality is an important one for participating clinics to consider. Careful readers may note in Tables O-6 through O-9, A-5, and E-3 through E-5, that some disease/exposure relationships which have been reported by participating clinics fall outside the scope of current knowledge in occupational medicine. While some of these disease/exposure specifications may be coding errors or the result of imprecise conclusions on the part of the clinician, others may be newly recognized disease/exposure relationships. Except in the case of very unlikely relationships, we (at GWU) have not attempted to second-guess the reporting clinics, and most cases have been included in this report. As members of a diverse group of "surveillance reporters", AOEC clinicians are encountering previously unrecognized causes of occupational and environmental disease. Thus, the need for case reports and for the Database as a whole to be accurate cannot be overemphasized. This will remain a critical challenge for the AOEC as the Database grows.

The AOEC Database solicits data only on cases with a diagnosed condition related (either definitively or possibly) to occupational or environmental exposures. There have been some questions as to whether particular types of cases qualify for inclusion. Some cases fall along the boundaries of the criteria for inclusion. In order to encourage uniformity among clinics in case reporting, the following guidelines are offered:

(1) Should cases be reported in which biological monitoring shows elevated levels of a substance or metabolite in the blood or urine? Many clinics have reported diagnoses such as "elevated blood lead" or "elevated urinary phenol"; some cases are specifically listed as asymptomatic. While these cases do make it clear that an exposure has occurred, it is not clear that a disease has resulted.

When there are related symptoms, or when the biologic marker clearly indicates the potential for adverse effects, report the case. When there are no symptoms, or when the biologic marker is only marginally raised/decreased, the case would not qualify for inclusion in the AOEC Database. Clinics who use the data entry software can, however, save these cases as "clinic-only" cases.

(2) Should cases be reported where there has been exposure to HIV or blood-borne pathogens via needlestick or other sharps or splash exposures, with no evidence of conversion? In some of these cases there is confirmed exposure to HIV, while in others the HIV or HepB status of the blood exposure may not be known.

Cases like these (exposure with no diagnosis) do not qualify for inclusion in the AOEC Database. A number of these cases were included in the 1991-1993 report with a diagnosis of acute trauma from HIV or blood-contaminated sharps, but are excluded from the Database after 1993. Again, these cases can be tracked as clinic-only cases by participating clinics.

(3) Should cases be reported where there have been real exposures, and extensive counseling about potential problems, e.g., cancer risk or risk of adverse reproductive effects?

Again, cases like these (exposure with no diagnosis) are not included in the AOEC Database. They can be tracked as clinic-only cases by participating clinics. Note that the diagnoses of these types of cases should usually be coded using "V-codes." We have included a selection of relevant V-codes in the diagnosis look-up utility.

(4) Should acute injury cases be reported to the AOEC database?

- *Injuries which occurred at work would qualify for inclusion if they are given a consult-level evaluation in the participating clinic.*

- *Injuries that did not occur at work should not be reported to the AOEC Database.*

(5) Should screening cases be reported to the AOEC Database?

Patients whose diagnoses were identified through screening programs and who were given a consult-level workup in the participating clinic will be included in the AOEC Database. With a screening diagnosis only (no consult workup) the case should not be included.

These examples point out that the AOEC Database provides only a partial picture of the broad spectrum of care provided at occupational and environmental medicine clinics. For many patients, an extensive clinical workup does not result in a diagnosis that can be definitively (or even possibly) linked to occupational or environmental hazards. The Database represents only those cases where diagnosis/exposure links have been established.

The AOEC Database has great potential utility as a surveillance resource for sentinel diseases and injuries and for emerging diseases and injuries. Information from the Database could be useful for targeting prevention efforts. In addition to the data found in this report, there are many other

descriptive analyses that interested clinicians, researchers, or regulators might wish to see or carry out. We encourage such inquiries.

The AOEC Database is also a resource to link clinicians who wish to share information on the diagnosis and treatment of occupational and environmental conditions. Note the following examples:

- An industrial hygienist from a member clinic was trying to find information about clinically diagnosed cases of asbestosis in elevator mechanics. The database matched two clinics with cases, and one of the physicians involved was able to direct the industrial hygienist to a group also collecting exposure data for the same group of workers.
- A clinician was searching for information on N-heptane and respiratory symptoms. The database matched two possible cases, and the clinician was referred to the clinics submitting the data for further discussion.

We welcome feedback from any reader of this report on the results, research ideas, or other issues raised by the report. As the AOEC Database continues to grow in size and representation, it will also grow in its practical utility, both for participating clinics and for the occupational and environmental health community as a whole. AOEC is committed to working on enhancements to better serve the needs of participating clinics, and to enhance the utility of the Database for surveillance of occupational and environmental disease.

IDENTIFIER Clinic	AOEC CASE REPORT FORM
	COMPLAINT _____

FIRST VISIT / / DATE DX / / YEAR BORN: 19_____ ZIP CODE - PC:_____	ETHNICITY __ Asian/Pac. Islander __ Black __ Hispanic __ Native American/ Aboriginal __ White __ Other __ Unknown	SEX ____ Male ____ Female	REFERRED BY __ Self Referred __ Physician __ Employer __ Attorney __ Union __ Govt. Agency __ Other __ Unknown

UNION ? __Y __N	UNION NAME _____
JOB STATUS ___Employed ___Unemployed ___Retired ___Disabled __ Unknown	CURRENT JOB _____ CODE _____ INDUSTRY _____ CODE _____
	MOST RELEVANT JOB _____ CODE _____ INDUSTRY _____ CODE _____

HAZARDS		
#1 _____	CODE _____	OCC/ENV/BOTH?____
#2 _____	CODE _____	OCC/ENV/BOTH?____
#3 _____	CODE _____	OCC/ENVBOTH?____

DIAGNOSES		
#1 _____	CODE _____	HAZ #1__ #2__ #3__
#2 _____	CODE _____	HAZ #1__ #2__ #3__
#3 _____	CODE _____	HAZ #1__ #2__ #3__

COMMENTS _____

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AOEC DATABASE, 1997 - 2000

"SUMMARY" TABLES AND FIGURES

All Cases Related to Occupational or Environmental Exposures, Including Possibles
(N=3,929)

Table S-1 - Summary of AOEC Cases Related or Possibly Related to Occupational or Environmental Exposures (N=3,929)

Category	1997	1998	1999	2000	Total*	(%)
Cases Definitively Related to Asbestos Exposure						
Occupational Exposure	366	721	404	569	2060	
Environmental Exposure	1	1	0	0	2	
Both	1	0	1	0	1	
Total	**368**	**722**	**405**	**569**	**2063**	**(52.5)**
Cases Definitively Related to Other Exposures						
Occupational Exposure	485	375	605	816	2281	
Environmental Exposure	48	40	53	40	181	
Both	14	12	4	4	34	
Total	**547**	**427**	**662**	**860**	**2496**	**(63.5)**
Cases Possibly Related to Asbestos Exposure						
Occupational Exposure	3	4	1	2	10	
Environmental Exposure	0	0	0	0	0	
Both	0	0	0	0	0	
Total	**3**	**4**	**1**	**2**	**10**	**(0.3)**
Cases Possibly Related to Other Exposures						
Occupational Exposure	69	37	47	37	190	
Environmental Exposure	19	10	4	5	38	
Both	5	1	0	0	6	
Total	**93**	**48**	**51**	**42**	**234**	**(6.0)**

* Because there are 874 cases with diagnosis/hazard relationships counted in more than one category above, the total number of cases across categories exceeds 3,929.

Figure S-1 - All AOEC Cases,
Number of Cases Reported (N= 9,783) By Quarter of Diagnosis,
January 1991- December 2000

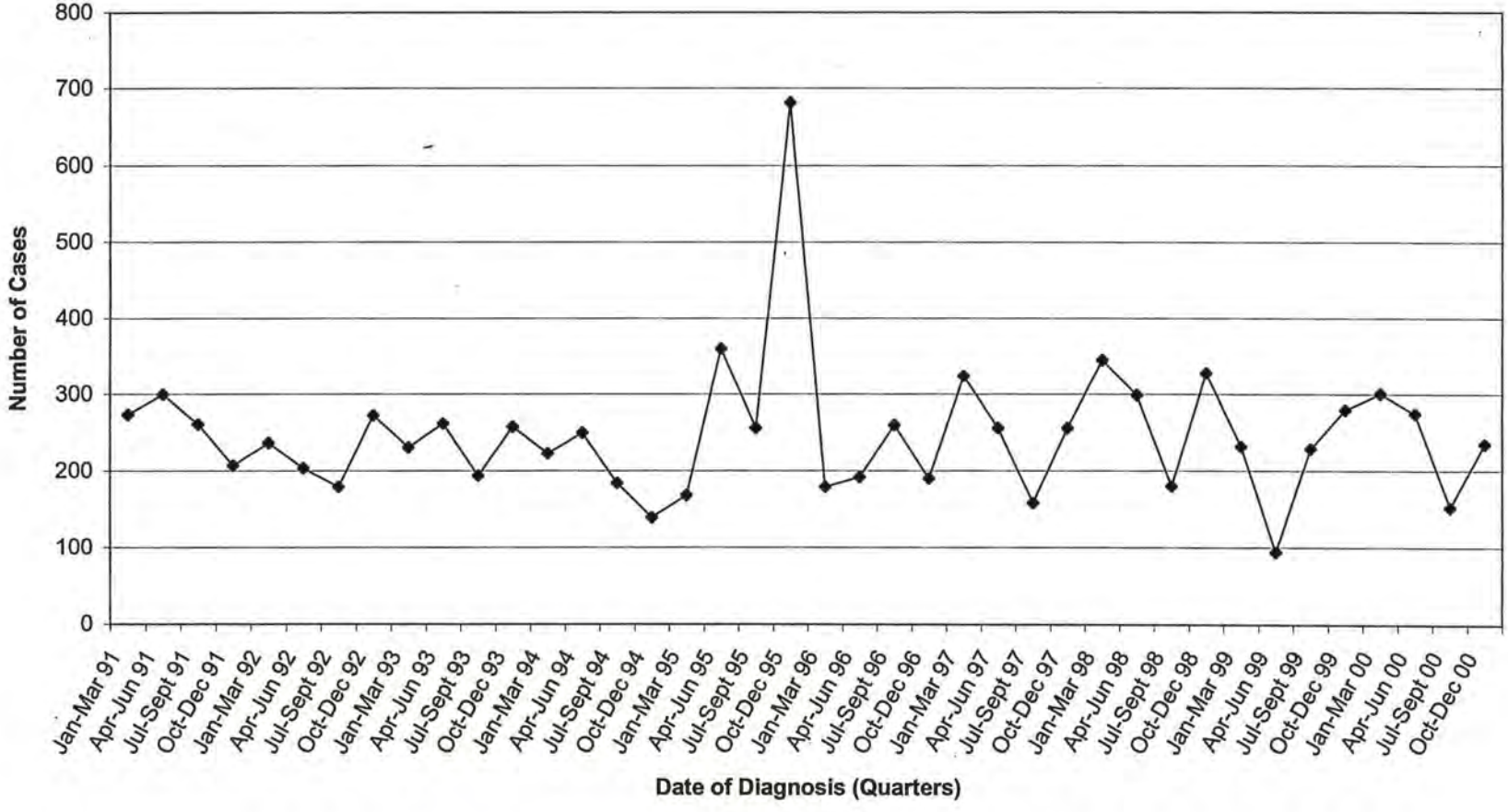

Table S-2 - All AOEC Cases Related or Possibly Related to Occupational or Environmental Exposures (N=3,929)

Demographic Characteristics

	1997	1998	1999	2000	Total Subtotal	(%) (%)
Cases from Participating Clinics	**995**	**1139**	**828**	**967**	**3,929**	**(100)**
Alberta, Canada	8	22	0	3	33	(0.8)
Cambridge, Massachusetts	2	1	20	46	69	(1.8)
Cook County Hospital, Illinois	149	40	83	45	317	(8.1)
Emory University, Georgia	66	34	26	30	156	(4.0)
George Washington University, DC	178	118	57	30	383	(9.7)
Massachusetts Respiratory Hospital	106	121	110	118	455	(11.6)
Michigan State University	42	38	44	50	174	(4.4)
Robert Wood Johnson, NJ	112	81	53	12	258	(6.6)
Saint Lawrence Hospital, MI	327	667	407	608	2009	(51.1)
Toxicology Associates, CO	4	15	27	22	68	(1.7)
University of New Mexico	0	0	1	3	4	(0.1)
University of Utah	1	2	0	0	3	(0.1)
Age						
< 20	7	8	5	5	25	(0.6)
20 - 29	59	45	35	26	165	(4.2)
30 - 39	177	116	90	82	465	(11.8)
40 - 49	250	226	171	163	810	(20.6)
50 - 59	245	367	213	313	1138	(29.0)
> 60	257	377	314	378	1326	(33.7)
Gender						
Male	662	904	626	785	2977	(75.8)
Female	333	235	202	182	952	(24.2)
Union Member (Occupational Cases Only, N= 3,712)						
Yes	143	121	66	65	395	(10.6)
No	255	173	124	134	686	(18.5)
Unknown	530	797	581	723	2631	(70.9)

Figure S-2 - Ethnicity
All AOEC Cases, 1997-2000 (N= 3,929)

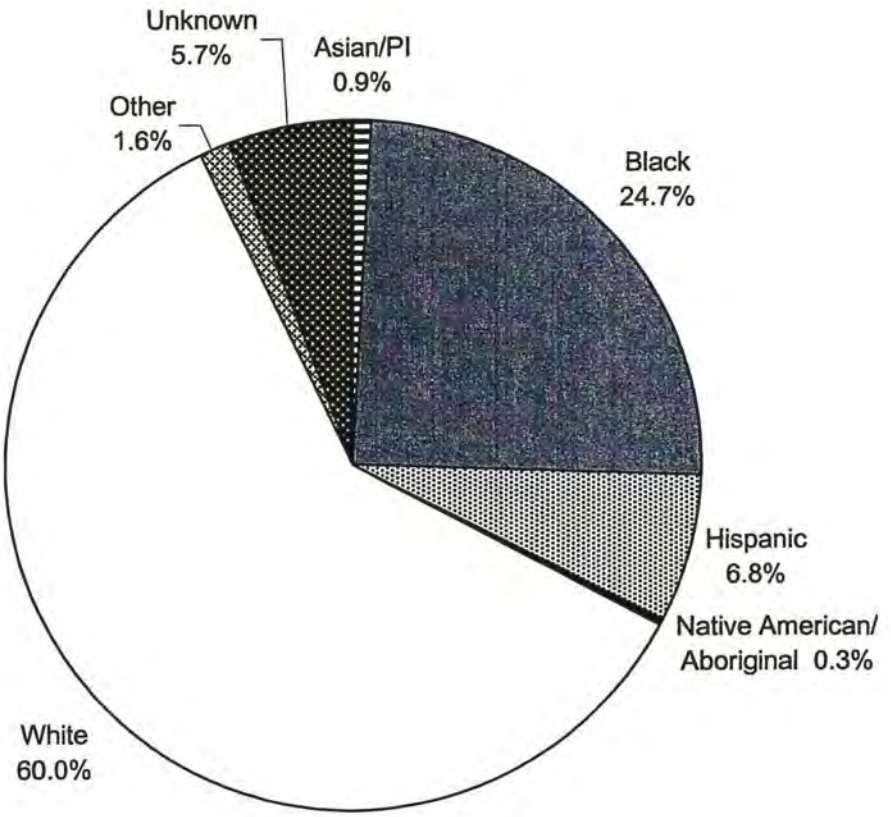

Figure S-3 - Referral Source
All AOEC Cases, 1997-2000 (N= 3,929)

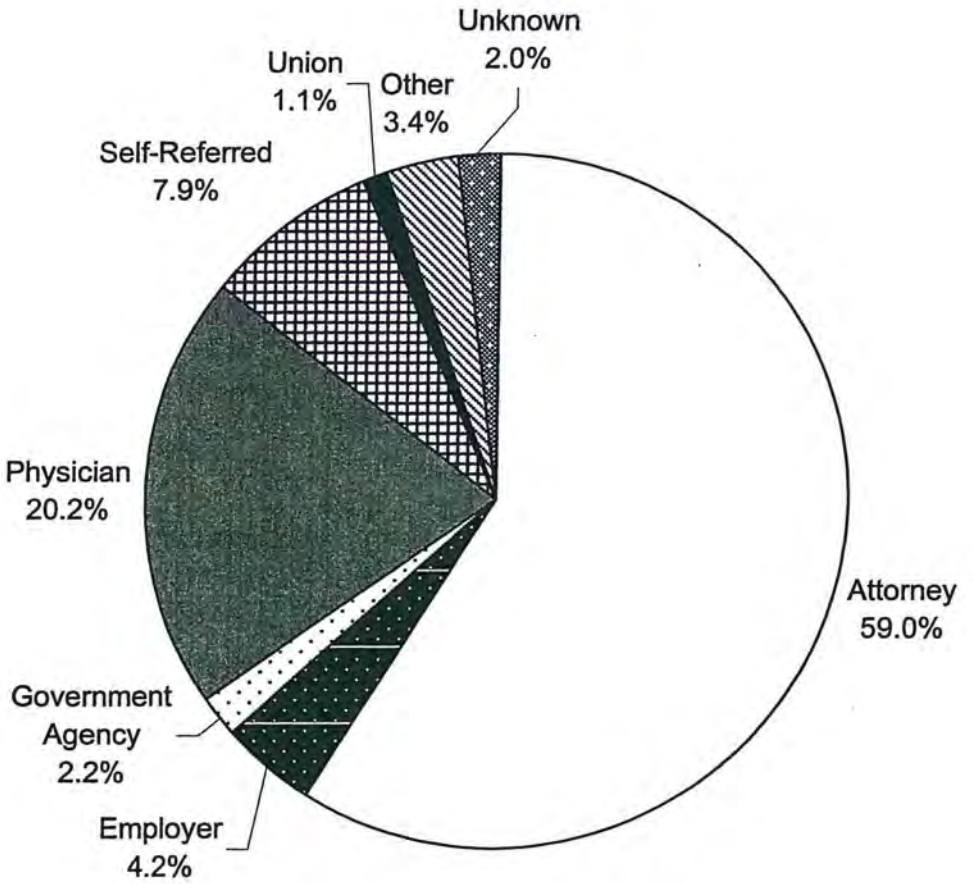

Figure S-4 - Job Status
All AOEC Cases, 1997-2000 (N= 3,712)*
*Occupational Cases Only

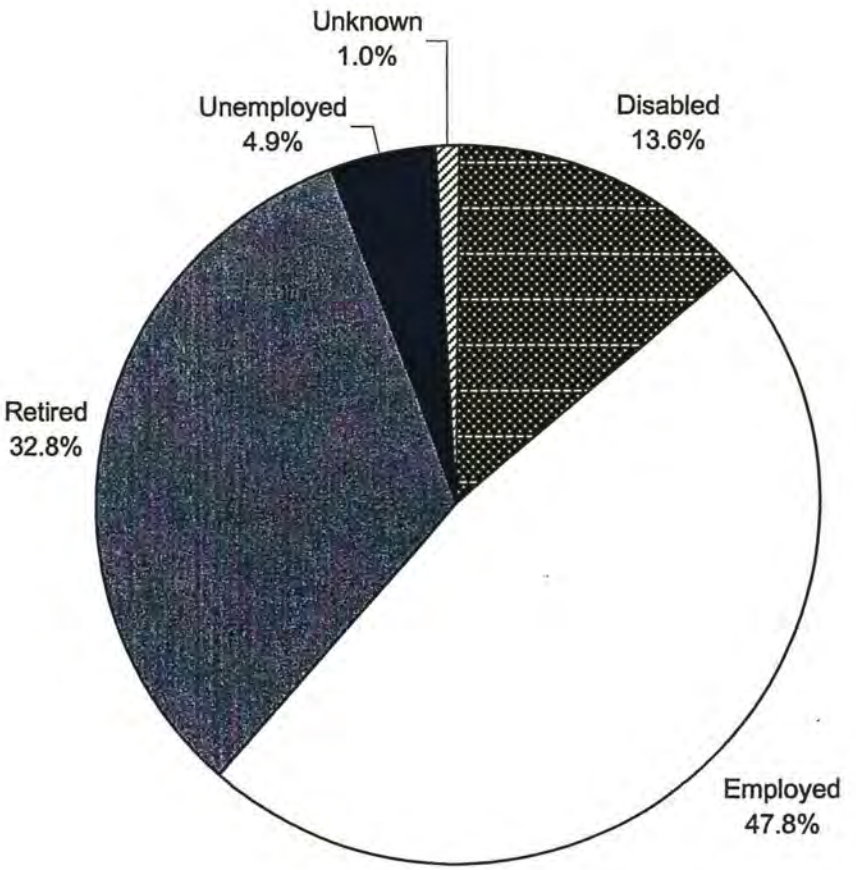

Table S-3 - All AOEC Occupational Cases, 1997 - 2000 (N= 3,712)

Current or Most Relevant Industry

SIC CODE	INDUSTRY	1997	1998	1999	2000	TOTAL	(%)*
01-09	Agriculture	1	5	0	4	10	(**0.3**)
10-14	Mining	13	3	16	9	41	(**1.1**)
15-17	Construction	118	90	110	141	459	(**12.4**)
20-39	Manufacturing	389	693	408	474	1,964	(**52.9**)
40-49	Transportation, Communication, Electric, Gas and Sanitary Services	92	57	37	106	292	(**7.9**)
50-51	Wholesale Trade	7	1	4	4	16	(**0.4**)
52-59	Retail Trade	37	15	11	9	72	(**1.9**)
60-67	Finance, Insurance and Real Estate	10	9	5	7	31	(**0.8**)
70-89	Services	186	156	122	110	574	(**15.5**)
91-97	Public Administration	62	49	22	25	158	(**4.3**)
	Missing	13	13	36	33	95	(**2.6**)
	Total	**928**	**1,091**	**771**	**922**	**3,712**	

* Percents do not total to 100 due to rounding.

Table S-4 - All AOEC Occupational Cases, 1997 – 2000 (N= 3,712)

Current or Most Relevant Occupation

SOC CODE	OCCUPATION	1997	1998	1999	2000	Total	(%)*
11-14	Executive, Administrative, and Managerial	32	34	29	19	114	(3.1)
16	Engineers and Architects	6	7	8	6	27	(0.7)
17-18	Natural Scientists and Mathematicians	19	12	14	10	55	(1.5)
19-21	Social Scientists, Social Workers and Lawyers	7	11	11	6	35	(1.0)
22-25	Teachers, Librarians and Counselors	34	34	22	15	103	(2.8)
26-28	Health Diagnosing and Treating Practitioners	5	2	3	3	13	(0.3)
29-30	Registered Nurses, Pharmacists and Therapists	13	21	16	16	66	(1.8)
32-33	Writers, Artists and Entertainers	12	7	5	10	34	(0.9)
36	Health Technologists and Technicians	10	4	8	5	27	(0.7)
37-39	Technologists and Technicians, Except Health	7	11	15	8	41	(1.1)
40-43	Marketing and Sales Occupations	18	4	6	12	40	(1.1)
45-47	Administrative Support Occupations, Incl Clerical	66	42	23	28	159	(4.3)
50-52	Service Occupations	89	54	28	44	215	(5.8)
55-56	Agricultural Occupations	3	4	3	3	13	(0.3)
60-61	Mechanics and Repairers	58	68	23	74	223	(6.0)
63-65	Construction and Extractive Occupations	123	109	131	155	518	(14.0)
67-69	Precision Production Occupations	24	42	39	50	155	(4.2)
71-78	Production Working Occupation	259	131	73	129	592	(15.9)
81-83	Transportation and Material Moving Occups	37	37	23	70	167	(4.5)
86-87	Handlers, Equipment Cleaners, Helpers & Laborers	102	446	283	246	1,077	(29.0)
91	Military Occupations	1	1	1	1	4	(0.1)
99	Miscellaneous/Missing Occupations	5	8	11	10	34	(0.9)
	Total	**930**	**1,089**	**773**	**920**	**3,712**	

* Percents do not total to 100 due to rounding.

Table S-5 - All AOEC Occupational Cases Belonging to Unions, 1997-2000 (N=358)

Union Membership

Union Name	Total	(%)*
United **Automobile**, Aerospace & Agricultural Implement Workers of America	75	(20.9)
Bakery, Confectionery and Tobacco Workers Int'l Union	5	(1.4)
Int'l Brotherhood of **Boilermakers,** Iron Ship Builders, Blacksmiths, Forgers and Helpers	5	(1.4)
Int'l Union of **Bricklayers** and Allied Craftsmen	4	(1.1)
United Brotherhood of **Carpenters** & Joiners of America	4	(1.4)
Communication Workers of America	6	(1.7)
National **Education** Association	7	(1.9)
Int'l Brotherhood of **Electrical Workers**	9	(2.5)
Int'l Union of **Elevator Constructors**	1	(0.3)
Brotherhood of Locomotive **Engineers**	1	(0.3)
Int'l Association of **Fire Fighters**	6	(1.7)
FTC Construction	1	(0.3)
American Federation of **Government** Employees	1	(0.3)
Int'l Association of Heat & Frost **Insulators and Asbestos Workers**	3	(0.8)
Association of **Journeymen** and Pipefitting Industries	2	(0.6)
Laborers Int'l Union	3	(0.8)
National **Marine** Engineers Beneficial Association	1	(0.3)
United **Mine Workers**	9	(2.5)
Federation of **Nurses and Health Practitioners**	2	(0.6)
Massachusetts **Nurses Assoc.**	17	(4.7)
Office and Professional Employees Int. Union	1	(0.3)
Int'l Union of **Operating Engineers**	7	(1.9)
Operative Plasterers' and Cement Masons Int'l Association	2	(0.6)
Int'l Brotherhood of **Painters** and Allied Trades	3	(0.8)
United Assoc of Journeyman & Apprentices of the **Plumbing and Pipefitting** Industry	3	(0.8)
Federation of **Postal Police** Officers	1	(0.3)
American **Postal Workers** Union	2	(0.6)
Intl Allied **Printing Trades** Assoc.	1	(0.3)
Retail, Wholesale, and Dept Store Union	2	(0.6)
United Union of **Roofers,** Waterproofers and Allied Workers	1	(0.3)
United **Rubber,** Cork, Linoleum, and Plastic Workers of America	1	(0.3)

Table S-5 - continued. Union Membership

Union Name	Total	(%)*
Service Employees Int'l Union	3	(0.8)
Sheet Metal Workers' Int'l Association	2	(0.6)
American Federation of **State County & Municipal Employees**	5	(1.4)
United **Steel Workers** of America	4	(1.1)
American Federation of **Teachers**	6	(1.7)
Int'l Brotherhood of **Teamsters**, Chauffers, Warehouseman and Helpers of America	9	(2.5)
Amalgamated **Transit** Union	1	(0.3)
Transport Workers Union	1	(0.3)
United **Transportation** Union	1	(0.6)
National **Treasury Employees** Union	1	(0.3)
Utility Workers' Union of America	1	(0.3)
Unknown/Incomplete Union Name	138	(38.5)
Total	**358**	

* Percents do not total to 100 due to rounding.

Table S-6-All AOEC Cases Related to Occupational or Environmental Exposures, 1997-2000 (3,929 Cases; 4,778 Hazards)

Hazards Related to One or More Diagnoses

HAZ CODE	HAZARD	FREQ	(%) of HAZARDS
010	**MINERAL AND INORGANIC DUSTS**	**2230**	**(48.8)**
010.00	Dust, NOS	36	(0.8)
010.02	Asbestos	2063	(43.2)
010.03	Cement Dust	4	(0.1)
010.04	Carbon Black	1	(0.0)
010.06	Coal	28	(0.6)
010.08	Graphite	1	(0.0)
010.09	Man-Made Mineral Fibers	9	(0.2)
010.12	Silica, Amorphous	2	(0.0)
010.13	Silica, Crystalline	84	(1.8)
010.16	Ash, NOS	1	(0.0)
012	Talcs		
012.00	Talc	1	(0.0)
020	**METALS AND METALLOIDS**	**135**	**(2.8)**
020.00	Metal Fumes, NOS	4	(0.1)
020.01	Aluminum	2	(0.0)
020.05	Arsenic	4	(0.1)
020.08	Beryllium	2	(0.0)
020.12	Cadmium	7	(0.1)
020.14	Chromium, Not Hexavalent	1	(0.0)
020.15	Cobalt	2	(0.0)
020.16	Copper	1	(0.0)
020.21	Lead, Inorganic	57	(1.2)
020.22	Lead, Organic	2	(0.0)
020.24	Manganese	4	(0.1)
020.25	Mercury, Inorganic	12	(0.3)
020.26	Mercury, Organic	5	(0.1)
020.28	Nickel	2	(0.0)
020.37	Tungsten Carbide	1	(0.0)
020.39	Zinc	2	(0.0)
020.40	Zinc Chloride	1	(0.0)
020.46	Heavy Metals, NOS	1	(0.0)
020.47	Metals, NOS	4	(0.1)
020.48	Titanium	1	(0.0)
021	Metal Dust, NOS		
021.00	Metal Dust, NOS	2	(0.0)
022	Hexavalent Chromium Compounds		
022.03	Sodium Dichromate	1	(0.0)

023	Welding Exposures		
023.00	Welding, NOS	16	(0.3)
023.04	Soldering Flux, Zinc Chloride/Ammonium Chloride	1	(0.0)
030	**HALOGENS (INORGANIC)**	**8**	**(0.2)**
030.02	Chlorine	6	(0.1)
030.04	Iodine	1	(0.0)
030.06	Chlorine Dioxide	1	(0.0)
040	**MISCELLANEOUS INORGANIC COMPOUNDS**	**35**	**(0.7)**
040.04	Carbon Monoxide	24	(0.5)
040.05	Fluxes, NOS	1	(0.0)
040.06	Hydrogen Sulfide	5	(0.1)
040.13	Phosphine	1	(0.0)
040.20	Sulfur Oxides	1	(0.0)
040.23	Thallium Salts	1	(0.0)
040.24	Irritant Gases, NOS	2	(0.0)
050	**ACIDS, BASES, AND OXIDIZING AGENTS**	**38**	**(0.8)**
050.00	Acids, Bases, Oxidizers, NOS	5	(0.1)
050.05	Calcium Oxide	3	(0.1)
050.09	Hydrobromic Acid	1	(0.0)
050.10	Hydrochloric Acid	5	(0.1)
050.11	Hydrofluroic Acid	3	(0.1)
050.12	Hydrogen Peroxide	1	(0.0)
050.17	Potassium Hydroxide	3	(0.1)
050.18	Sodium Hydroxide	3	(0.1)
050.24	Sulfuric Acid	3	(0.1)
050.26	Acid Solder	1	(0.0)
050.32	Phosphorus Bromide	1	(0.0)
050.33	Acid & Base Mixture	1	(0.0)
050.34	Acetic Acid	2	(0.0)
050.38	Sodium Tripolyphosphate	1	(0.0)
050.44	Hydrofluosilicic Acid	1	(0.0)
052	Ammonia Compounds		
052.01	Ammonia Gas	2	(0.0)
052.03	Ammonium Salts	2	(0.0)
060	**ALIPHATIC AND ALICYCLIC HYDROCARBONS**	**29**	**(0.6)**
060.03	Heptane	1	(0.0)
060.05	Limonene	1	(0.0)
060.06	Methane	1	(0.0)
060.07	Mineral Oil	1	(0.0)
060.10	Turpentine	2	(0.0)
060.11	4-PC	5	(0.1)
060.17	Terpene	1	(0.0)
060.18	D-Limonene	1	(0.0)

061	Petroleum Derivatives		
061.00	Petroleum Fractions, NOS	1	(0.0)
061.01	Petroleum Spirits	4	(0.1)
061.02	Naphtha	1	(0.0)
061.03	Kerosene	2	(0.0)
061.04	Gasoline	1	(0.0)
061.06	Diesel Fuel	6	(0.1)
070	**ALCOHOLS**	**1**	**(0.1)**
070.06	Isopropyl Alcohol	1	(0.0)
080	**GLYCOLS**	**1**	**(0.0)**
080.01	Ethylene Glycol	1	(0.0)
090	**GLYCOL ETHERS**	**2**	**(0.0)**
090.00	Glycol Ethers, NOS	1	(0.0)
090.01	Propylene Glycol Ethers	1	(0.0)
100	**ETHERS**	**2**	**(0.1)**
100.08	Methyl Tertiary Butyl Ether	2	(0.1)
110	**EPOXY COMPOUNDS**	**7**	**(0.1)**
110.02	Epoxy Resins	4	(0.1)
110.04	Rosin	1	(0.0)
110.05	Paint, Epoxy	2	(0.0)
120	**ALDEHYDES AND ACETALS**	**30**	**(0.6)**
120.03	Formaldehyde	21	(0.4)
120.05	Glutaraldehyde	9	(0.2)
130	**KETONES**	**14**	**(0.3)**
130.00	Ketones, NOS	3	(0.1)
130.01	Acetone	2	(0.0)
130.03	Methyl Ethyl Ketone	8	(0.2)
130.05	Methyl N-Butyl Ketone	1	(0.0)
140	**ESTERS**	**12**	**(0.3)**
141	Acetates		
141.03	Ethyl Acetate	2	(0.0)
141.04	Vinyl Acetate	1	(0.0)
141.05	2-Ethoxyethyl Acetate	1	(0.0)
142	Acrylates		
142.00	Acrylates, NOS	5	(0.1)
142.01	Acrylic Monomer	1	(0.0)
142.04	Methyl Metacrylate	1	(0.0)
142.07	Cyanoacrylates, NOS	1	(0.0)

150	**CARBOXYLIC ACIDS AND ANHYDRIDES**	**3**	**(0.1)**
151	Anhydrides		
151.01	Phthalic Anhydride	2	(0.0)
151.08	Hexahydrophthalic Anhydride	1	(0.0)
160	**AROMATIC HYDROCARBONS**	**30**	**(0.6)**
160.00	Aromatic Hydrocarbons, NOS	7	(0.1)
160.01	Benzene	5	(0.1)
160.02	Toluene	9	(0.2)
160.03	Xylene	4	(0.1)
160.04	Styrene	1	(0.0)
160.05	Naphthalene	1	(0.0)
160.08	Vinyl Toluene	1	(0.0)
161	Polycyclic Aromatic Hydrocarbons		
161.00	Polycyclic Aromatic Hydrocarbons, NOS	2	(0.0)
170	**HYDROCARBONS, NOS**	**145**	**(3.0)**
170.00	Hydrocarbons, NOS	7	(0.1)
170.01	Cutting Oils	26	(0.5)
170.02	Inks	1	(0.0)
170.03	Oils, NOS	3	(0.1)
170.06	Waxes, NOS	1	(0.0)
171	Solvents, NOS		
171.00	Solvents, NOS	74	(1.5)
171.01	Paint	28	(0.6)
171.02	Thinner	2	(0.0)
171.03	Stripper	1	(0.0)
171.07	Lacquer	2	(0.0)
180	**PHENOLS AND PHENOLIC COMPOUNDS**	**6**	**(0.1)**
180.01	Creosote	2	(0.0)
180.03	Hydroquinone	2	(0.0)
180.04	Phenol	2	(0.1)
190	**HALOGENATED ALIPHATIC HYDROCARBONS (EXCEPT ORGANOCHLORINE PESTICIDES)**	**23**	**(0.5)**
190.00	Chlorinated Hydrocarbons, NOS	2	(0.1)
190.02	Chloroethane	1	(0.0)
190.03	Chloroform	1	(0.0)
190.08	Methyl Chloroform (1,1,1-Trichloroethane)	1	(0.0)
190.09	Methylene Chloride	3	(0.1)
190.10	Perchloroethylene (Tetrachloroethylene)	1	(0.0)
190.12	1,1,2-Trichloroethane	1	(0.0)
190.13	Trichloroethylene	8	(0.2)
192	Flurocarbons		
192.01	Freon, NOS	5	(0.1)

200	**HALOGENATED AROMATIC HYDROCARBONS**	**1**	**(0.0)**
200.04	Chlorinated Dibenzodioxins	1	(0.0)
210	**CYANIDES AND NITRILES**	**2**	**(0.0)**
211	Cyanides and Related Compounds		
211.00	Cyanides, NOS	1	(0.0)
211.03	Sodium Cyanide	1	(0.0)
220	**ISOCYANATES**	**38**	**(0.8)**
221	Diisocyanates		
221.00	Isocyanates, NOS	30	(0.6)
221.01	Toluene Diisocyanate	2	(0.0)
221.02	Methylene Diisocyanate	3	(0.1)
221.04	Hexamethylene Diisocyanate	3	(0.1)
230	**ALIPHATIC AND ALICYCLIC AMINES**	**4**	**(0.1)**
231	Ethanolamines		
231.00	Ethanolamines, NOS	2	(0.0)
232	Polyamines		
232.00	Polyamines, NOS	2	(0.0)
250	**AROMATIC AND AMINO COMPOUNDS (INCLUDING HETEROCYCLIC)**	**5**	**(0.1)**
250.14	Pyridine	2	(0.0)
250.17	Dyes, NOS	3	(0.1)
260	**ALIPHATIC (INCLUDING HERERocyclic) AND MISC. NITROGEN COMPOUNDS**	**3**	**(0.1)**
260.10	Ethylenimine	1	(0.0)
260.27	Amyl Nitrate	1	(0.0)
261	Nitroglycerin and Related Compounds		
261.01	Nitroglycerin	1	(0.0)
270	**POLYMERS**	**52**	**(1.1)**
270.00	Polymers, NOS	4	(0.1)
270.01	Acrylics	2	(0.0)
270.02	Latex, Natural Rubber	24	(0.5)
270.05	Polyester Resin	1	(0.0)
270.06	Polyethylene, NOS	4	(0.1)
270.07	Polyurethane	4	(0.1)
270.09	Polyvinyl Chloride	3	(0.1)
270.10	Silicone	3	(0.1)
270.15	Resin Systems, NOS	2	(0.0)
270.20	Polystyrene	1	(0.0)
270.33	Polypropylene, Heated	1	(0.0)
270.36	Carbopol, NOS	1	(0.0)

271	Rubber		
271.00	Rubber, NOS	2	(0.0)
280	**ORGANOCHLORINE PESTICIDES**	**3**	**(0.1)**
280.00	Organochlorine Pesticides, NOS	3	(0.1)
290	**ORGANOPHOSPHATE PESTICIDES AND CARBAMATE PESTICIDES**	**13**	**(0.3)**
291	Organophosphate Pesticides		
291.00	Organophosphate Pesticides, NOS	2	(0.0)
291.01	Malathion	1	(0.0)
291.05	Chlorpyrifos	8	(0.2)
291.12	Ethephon	1	(0.0)
291.13	Monoammonium Phosphate	1	(0.0)
300	**ORGANIC PHOSPHATES (NON-PESTICIDE)**	**1**	**(0.0)**
300.00	Organic Phosphates, Nonpesticide	1	(0.0)
310	**ORGANIC SULFUR COMPOUNDS**	**1**	**(0.0)**
311	Mercaptans		
311.00	Mercaptans, NOS	1	(0.0)
320	**MISCELLANEOUS CHEMICALS AND MATERIALS REFERENCED BY USE**	**322**	**(6.7)**
320.01	Air Pollutants, Indoor	155	(3.2)
320.06	Chemicals, NOS	56	(1.2)
320.07	Electroplating Chemicals, NOS	1	(0.0)
320.08	Fungicide, NOS	1	(0.0)
320.10	Fire Extinguisher Discharge	1	(0.0)
320.11	Glues, NOS	13	(0.3)
320.12	Hair Products	2	(0.0)
320.13	Herbicides, NOS	5	(0.1)
320.14	Lubricants, NOS	5	(0.1)
320.15	Odors	11	(0.2)
320.16	Pesticides, NOS	16	(0.3)
320.17	Photo Developing Chemicals, NOS	3	(0.1)
320.18	Pyrethrins	1	(0.0)
320.20	Theatrical Fog, NOS	1	(0.0)
320.23	Perfume, NOS	4	(0.1)
320.25	Ninhydrin	2	(0.0)
320.27	Mace	1	(0.0)
320.34	Fingerprint Powder	1	(0.0)
321	Pharmaceutical Compounds		
321.00	Pharmaceuticals, NOS	2	(0.0)
321.29	Cyclophosphamide	1	(0.0)

322	Cleaning Materials		
322.00	Cleaning Materials, NOS	12	(0.3)
322.04	Cleaners, Household, General Purpose	2	(0.0)
322.07	Ammonia Solution, NOS	2	(0.0)
322.10	Bleach	6	(0.1)
322.16	Cleaners, Carpet	2	(0.0)
322.18	Cleaners, Detergent, NOS	1	(0.0)
322.19	Cleaners, Disinfectant, NOS	1	(0.0)
322.25	Cleaners, Oven	2	(0.0)
322.32	Quaternary Ammonium Compounds, NOS	2	(0.0)
323	Waste		
323.01	Waste, Hazardous	4	(0.1)
324	Enzymes and Catalysts		
324.14	Lactase	1	(0.0)
326	Unknown Cause within Defined Process		
326.01	Pickle Processing (Unknown Causal Agent)	1	(0.0)
327	Water Contamination		
327.00	Water Contamination, NOS	2	(0.0)
327.02	Water Contamination, Inorganic	2	(0.0)
330	**PYROLYSIS PRODUCTS**	**87**	**(1.8)**
330.01	Cigarette Smoke	12	(0.3)
330.02	Plastic Smoke	2	(0.0)
330.03	Smoke, NOS	60	(1.3)
330.05	Marijuana Smoke	1	(0.0)
330.06	Smoke, Lead-Containing	1	(0.0)
331	Exhaust		
331.00	Exhaust, NOS	3	(0.1)
331.01	Diesel Exhaust	5	(0.1)
331.02	Engine Exhaust	3	(0.1)
350	**PHYSICAL FACTORS**	**1038**	**(21.7)**
350.00	Physical Factors, NOS	3	(0.1)
350.01	Noise	877	(18.4)
350.02	Cold	1	(0.0)
350.03	Heat	6	(0.1)
351	Ionizing Radiation		
351.04	Therapeutic Radiation	1	(0.0)
351.05	Uranium	1	(0.0)
352	Non-Ionizing Radiation		
352.04	Radiation, Ultraviolet	1	(0.0)

353	Trauma-Related Exposures		
353.00	Trauma, Acute, NOS	36	(0.8)
353.01	Electrical Shock	3	(0.1)
353.03	Fall, NOS	61	(1.3)
353.05	Motor Vehicle Accident	6	(0.1)
353.06	Struck by Motor Vehicle (Road)	3	(0.1)
353.08	Struck by Falling Object	11	(0.2)
353.09	Struck Against/Struck By Objects or Persons	15	(0.3)
353.10	Caught In or Between Objects	7	(0.1)
353.11	Cutting or Piercing Object, Except Blood-Contam.	1	(0.0)
353.12	Assault, Physical	2	(0.0)
354	Vibration		
354.00	Vibration, NOS	2	(0.0)
354.02	Vibration, Whole Body	1	(0.0)
360	**ERGONOMIC FACTORS**	**357**	**(7.5)**
360.00	Ergonomic Factors, NOS	13	(0.3)
360.02	Keyboard Use	129	(2.7)
360.03	Repetitive Motion	85	(1.8)
360.04	Stress	3	(0.1)
360.06	Exercise	1	(0.0)
360.08	Walking	1	(0.0)
361	Force		
361.01	Forceful Movements, NOS	13	(0.3)
361.02	Lifting	76	(1.6)
361.03	Gripping, Forceful	4	(0.1)
362	Posture		
362.00	Posture, NOS	6	(0.1)
362.01	Posture, Upper Extremity	14	(0.3)
362.02	Posture, Body - Static	5	(0.1)
362.03	Posture, Body - Dynamic	7	(0.1)
370	**PLANT MATERIAL**	**26**	**(0.5)**
370.00	Plant Material, NOS	3	(0.1)
370.02	Cotton Dust	3	(0.1)
370.10	Pollen	2	(0.0)
371	Flour		
371.00	Flour, NOS	4	(0.1)
371.04	Wheat Flour	3	(0.1)
373	Wood Dusts		
373.00	Wood Dust, NOS	11	(0.2)
380	**ANIMAL MATERIALS**	**15**	**(0.3)**
380.00	Animal Material, NOS	4	(0.1)
380.04	Dander, Animal	3	(0.1)

380.05	Venom	1	(0.0)
380.07	Chicken	1	(0.0)
380.08	Pig	1	(0.0)
380.16	Avian Material, NOS	2	(0.0)
380.18	Rat Antigens	1	(0.0)
382	Insect Materials		
382.13	Mites, NOS	1	(0.0)
382.21	Insect Bite, NOS	1	(0.0)
390	**MICROORGANISMS**	**58**	**(1.2)**
390.00	Microorganisms, NOS	2	(0.0)
390.01	Mold, NOS	33	(0.7)
390.02	Mycotoxins	1	(0.0)
390.07	Infectious Agents, NOS	1	(0.0)
390.09	Hepatitis B	1	(0.0)
390.10	Tuberculosis	18	(0.4)
390.16	Body Fluid Exposure (Unknown Infection Status)	2	(0.0)
000	**UNKNOWN/UNSPECIFIED**	**2**	**(0.0)**
	TOTAL	**4,778**	**(100.0)**

AOEC DATABASE, 1997 - 2000

"OTHER OCCUPATIONAL" TABLES AND FIGURES

Cases Related to Occupational Exposures Other than Asbestos (N=2,315)

Table O-1 - AOEC Cases Related to Occupational Exposures, Other Than Asbestos (N= 2,315)

Demographic Characteristics

	1997	1998	1999	2000	Total Subtotal	(%) (%)
Cases from Participating Clinics	**499**	**387**	**609**	**820**	**2,315**	**(100.0)**
Alberta, Canada	8	20	0	3	31	(1.3)
Cambridge, Massachusetts	2	0	18	37	57	(2.5)
Cook County Hospital, Illinois	119	27	56	28	230	(9.9)
Emory University, Georgia	23	14	13	9	59	(2.5)
George Washington University, DC	170	117	50	29	366	(15.8)
Massachusetts Respiratory Hospital	70	87	61	83	301	(13.0)
Michigan State University	30	27	40	46	143	(6.2)
Robert Wood Johnson, NJ	49	34	29	9	121	(5.2)
Saint Lawrence Hospital, MI	23	52	323	560	958	(40.4)
Toxicology Associates, CO	4	7	18	14	43	(1.9)
UNM	0	0	1	2	3	(0.1)
Rocky Mountain Center, UT	1	2	0	0	3	(0.1)
Age						
< 20	0	2	2	1	5	(0.2)
20 - 29	47	35	30	19	131	(5.7)
30 - 39	149	93	65	69	376	(16.2)
40 - 49	155	111	130	131	527	(22.8)
50 - 59	99	94	153	268	614	(26.5)
> 59	49	52	229	332	662	(28.6)
Gender						
Male	249	212	463	680	1604	(69.3)
Female	250	175	146	140	711	(30.7)
Union Member						
Yes	95	76	48	56	275	(11.9)
No	193	140	99	123	555	(24.0)
Unknown	211	171	462	641	1485	(64.1)

Figure O-1 - Ethnicity
AOEC Cases Related to Occupational Exposures Other than Asbestos, 1997-2000 (N= 2,315)

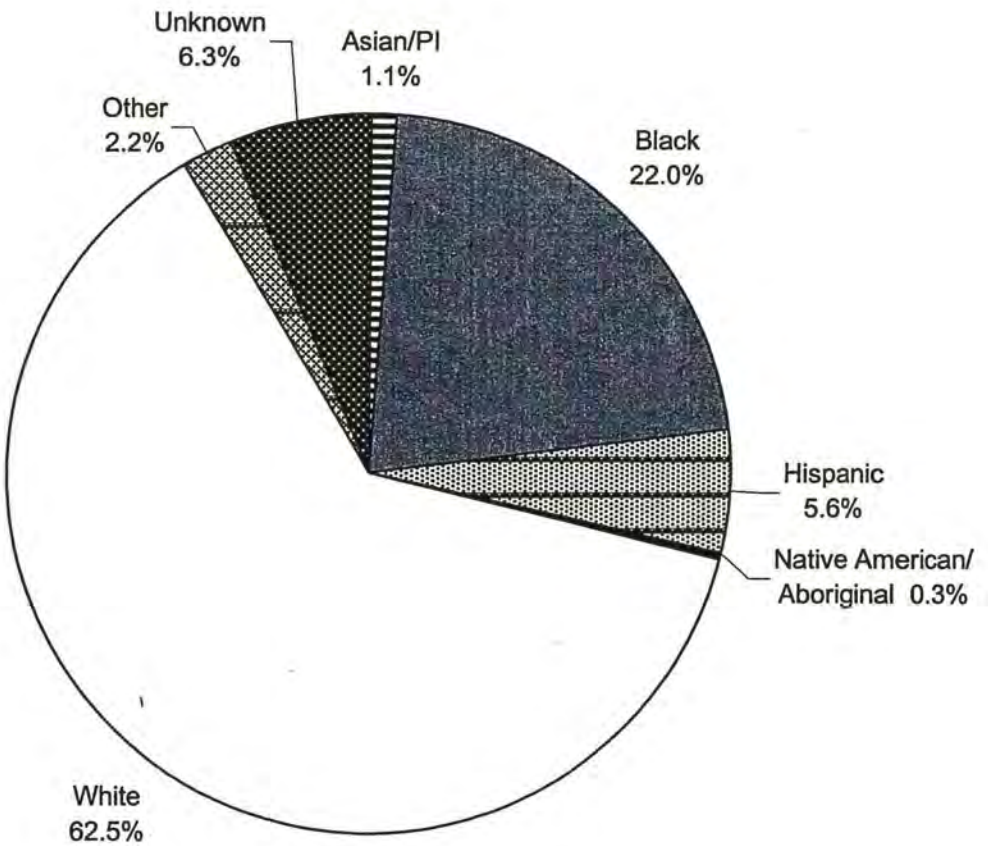

Figure O-2 - Referral Source
AOEC Cases Related to Occupational Exposures Other than Asbestos, 1997-2000 (N= 2,315)

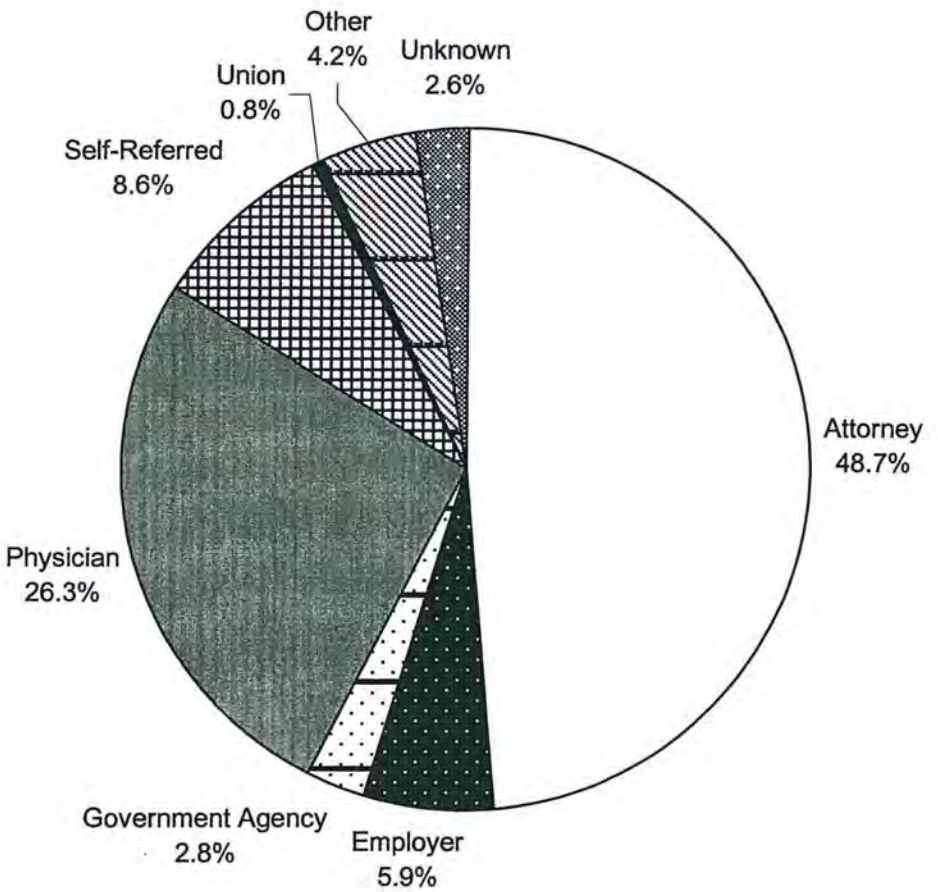

Figure O-3 - Job Status
AOEC Cases Related to Occupational Exposures Other than Asbestos, 1997-2000 (N= 2,315)

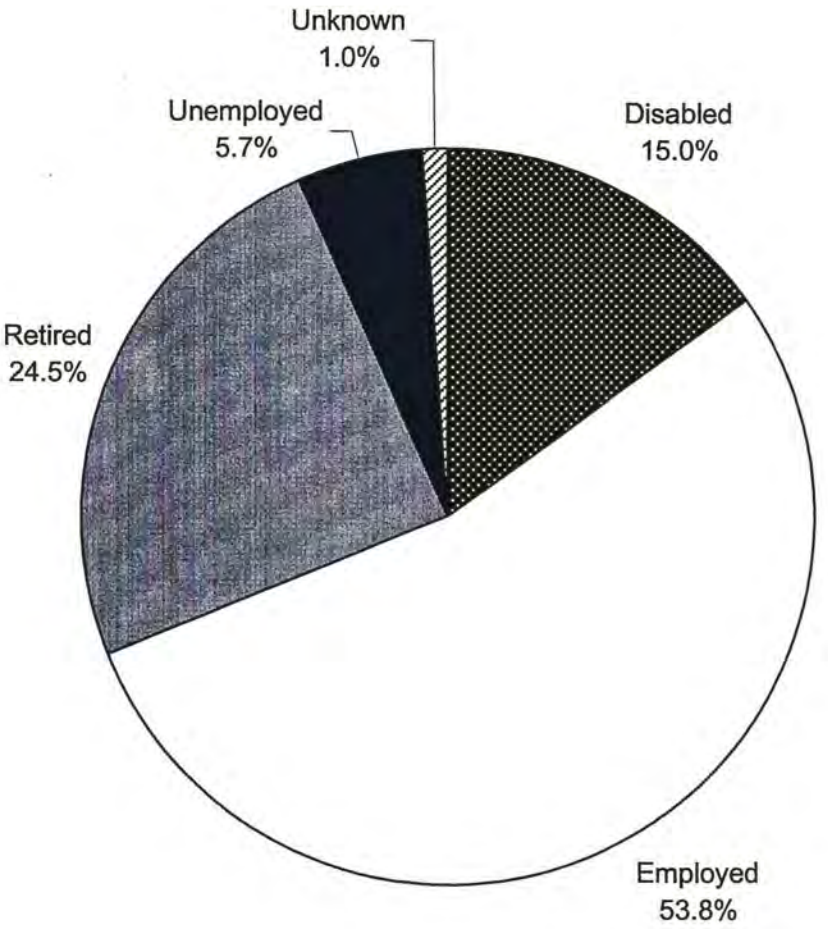

Table O-2 - AOEC Cases Related to Occupational Exposures, Other Than Asbestos (N= 2,315)

Current or Most Relevant Industry

SIC CODE	INDUSTRY	1997	1998	1999	2000	TOTAL	(%)*
01-08	**Agriculture**	**1**	**2**	**0**	**4**	**7**	**(0.3)**
	Agricultural Production, crops					2	
	Agricultural Services					2	
	Agricultural Production, livestock					2	
	Forestry					1	
10-13	**Mining & Natural Gas**	**12**	**2**	**13**	**5**	**32**	**(1.4)**
	Coal Mining					28	
	Metal Mining					1	
	Petroleum & Natural Gas					2	
15-17	**Construction**	**28**	**26**	**92**	**121**	**267**	**(11.5)**
	Construction - special trade contractors					190	
	Building Constr-gen. contractors/operative bldg.					59	
	Heavy Construction, other than building					13	
	Other Construction					5	
20-39	**Manufacturing**	**122**	**115**	**304**	**438**	**979**	**(42.3)**
	Primary Metal Industries					336	
	Transportation Equipment					210	
	Fabricated Metal Products, except machinery and transportation equipment					204	
	Chemicals and Allied Products					35	
	Printing, Publishing and Allied Industries					27	
	Food and Kindred Products					26	
	Electronic & Oth Electric Equipmt & Components, except computer equipment					25	
	Industrial & Commercial Machinery & Computer Equipt.					25	
	Rubber and Miscellaneous Plastic Products					19	
	Paper and Allied Products					13	
	Textile Mill Products					8	
	Stone, Clay, Glass and Concrete Products					7	
	Lumber and Wood Products					6	
	Furniture and Fixtures					6	
	Petroleum Refining and Related Industries					4	
	Measuring, Analyzing & Controlling Instruments					3	
	Apparel and Other Finished Products					2	
	Leather and Leather Products					2	
	Miscellaneous Manufacturing Industries					21	
40-49	**Transportation, Communication, Electric, Gas and Sanitary Services**	**57**	**26**	**27**	**92**	**202**	**(8.7)**
	Railroad Transportation					101	
	Transportation by Air					22	
	Motor Freight Transportation & Warehousing					22	
	Electric, Gas and Sanitary Services					16	
	U.S. Postal Service					12	
	Communications					11	
	Local and Suburban Transit and Interurban Highway					9	
	Transportation Services					6	
	Water Transportation					3	

Table O-2 - continued, Current or Most Relevant Industry

SIC CODE	INDUSTRY	1997	1998	1999	2000	TOTAL	(%)*
50-51	**Wholesale Trade**	**7**	**1**	**2**	**4**	**14**	**(0.6)**
	Wholesale Trade-durable goods					8	
	Wholesale Trade-nondurable goods					6	
52-59	**Retail Trade**	**32**	**13**	**11**	**9**	**65**	**(2.8)**
	Food Stores					14	
	Eating and Drinking Places					14	
	Miscellaneous Retail					12	
	General Merchandise Stores					11	
	Auto Dealers & Gasoline Service Stations					5	
	Home Furniture, Furnishing & Equipment Stores					2	
	Building Materials					4	
	Apparel and Accessory Stores					3	
60-67	**Finance, Insurance and Real Estate**	**7**	**6**	**3**	**5**	**21**	**(0.9)**
	Real Estate					6	
	Insurance Carriers					5	
	Depository Institutions					4	
	Non-Depository Credit Unions					3	
	Insurance Agents, Brokers and Services					3	
70-89	**Services**	**169**	**140**	**109**	**96**	**514**	**(22.2)**
	Health Services					160	
	Educational Services					131	
	Business Services					54	
	Engineering, Accntg, Research, Mangmt & Related Svcs					40	
	Hotels, Rooming Houses, Camps & Other Lodging Places					22	
	Automobile Repair, Services and Parking					20	
	Legal Services					19	
	Membership Organizations					17	
	Miscellaneous Services					15	
	Social Services					12	
	Personal Services					11	
	Museums, Art Galleries, & Botanical & Zoological Gardens					7	
	Amusement and Recreation Services					5	
	Motion Pictures					1	
91-97	**Public Administration**	**56**	**45**	**20**	**23**	**144**	**(6.2)**
	Justice, Public Order, and Safety					54	
	Exec, Legislative & General Gov't, except finance					23	
	National Security and International Affairs					20	
	Administration of Economic Programs					17	
	Admin. of Environmental Quality & Housing Programs					12	
	Public Finance, Taxation & Monetary Policy					9	
	Administration of Human Resource Programs					9	
	Missing	**8**	**11**	**27**	**24**	**70**	**(3.0)**
	Total	**499**	**387**	**608**	**821**	**2,315**	

* Percents do not total to 100 due to rounding.

Table O-3 - AOEC Cases Related Occupational Exposures, Other Than Asbestos (N=2,315)

Current or Most Relevant Occupation

SOC CODE	OCCUPATION	1997	1998	1999	2000	Total	(%)*
11-14	**Executive, Administrative, and Managerial**	**24**	**27**	**28**	**17**	**96**	**(4.1)**
	Management Related Occupations, NEC					14	
	Managers, Service Organizations					11	
	Accountants, Auditors, & Other Financial Specialists					10	
	Chief Executives and General Administrators					9	
	Education Administrators					8	
	Officials and Administrators, Government Agencies					8	
	Inspectors and Compliance Officers					7	
	Construction Managers					3	
	Financial Managers					3	
	Officials and Administrators; Other, NEC					3	
	Personnel, Training and Labor Relations Specialists					3	
	Production Managers, Industrial					3	
	Legislators					2	
	Management Analysts					2	
	Managers, Medicine and Health					2	
	Managers; Administrative Services					2	
	Public Utilities Managers					2	
	Purchasing Agents and Buyers					2	
	Managers; Engineering, Mathematics, and Natural Sciences					1	
	Personnel and Labor Relations Managers					1	
16	**Engineers and Architects**	**3**	**6**	**8**	**5**	**22**	**(1.0)**
	Engineers					21	
	Architects					1	
17-18	**Natural Scientists and Mathematicians**	**15**	**10**	**13**	**9**	**47**	**(2.0)**
	Physical Scientists					17	
	Computer Scientists					12	
	Mathematical & Operations Research Occs					9	
	Life Scientists					8	
	Operations & Systems Researchers & Analysts					1	
19-21	**Social Scientists, Social Workers and Lawyers**	**3**	**10**	**7**	**6**	**26**	**(1.1)**
	Social Scientists					11	
	Lawyers					8	
	Social and Recreation Workers					6	
	Urban and Regional Planners					1	
22-25	**Teachers, Librarians and Counselors**	**33**	**34**	**18**	**13**	**98**	**(4.2)**
	Teachers, Except Postsecondary Institutions					60	
	Librarians, Archivists, and Curators					17	
	Teachers; College, Univ, & Oth Postsecondary Insts					17	
	Vocational and Educational Counselors					4	
26-28	**Health Diagnosing and Treating Practitioners**	**5**	**2**	**3**	**3**	**13**	**(0.6)**
	Physicians					13	

Table O-3, continued. Current or Most Relevant Occupation

SOC CODE	OCCUPATION	1997	1998	1999	2000	Total	(%)*
29-30	**Registered Nurses, Pharmacists and Therapists**	**13**	**21**	**15**	**16**	**65**	**(2.8)**
	Registered Nurses					58	
	Pharmacists, Dietitians and Therapists					7	
32-33	**Writers, Artists and Entertainers**	**11**	**7**	**3**	**10**	**31**	**(1.3)**
	Writers, Artists Performers, and Related Workers					19	
	Editors, Reporters, Publ Relations Spec'l, & Announcers					12	
36	**Health Technologists and Technicians**	**10**	**4**	**8**	**5**	**27**	**(1.2)**
	Health Technologists and Technicians, NEC					13	
	Clinical Laboratory Technologists and Technicians					7	
	Radiologic Technologists and Technicians					5	
	Dental Hygienists					1	
	Licensed Practical Nurses					1	
37-39	**Technologists and Technicians, Except Health**	**7**	**11**	**11**	**6**	**35**	**(1.5)**
	Science Technologists and Technicians, NEC					12	
	Programmers					10	
	Biological Technologists and Technicians, Exc Hlth					7	
	Legal Technicians					4	
	Technicians, NEC					2	
40-44	**Marketing and Sales Occupations**	**16**	**3**	**6**	**11**	**36**	**(1.6)**
	Retail Sales Occupations					25	
	Supervisors; Sales Occupations, Retail					7	
	Business Service Sales Occupations					1	
	Insurance, Real Estate, & Securities Sales Occs					1	
	Technical Sales Workers and Service Advisors					1	
	Other Sales Occupations					2	
45-47	**Administrative Support Occupations, Incl Clerical**	**57**	**39**	**18**	**25**	**139**	**(6.0)**
	Secretaries, Stenographers, and Typists					37	
	General Office Occupations					23	
	Material Recording, Scheduling, & Distributing Clerks					22	
	Mail and Message Distributing Occupations					17	
	Record Clerks					5	
	Adjusters, Investigators, and Collectors					4	
	Financial Record Processing Occupations					4	
	Information Clerks					4	
	Communications Equipment Operators					3	
	Computer and Peripheral Equipment Operators					3	
	Supervisors; Administrative Support Occs, incl Clerical					3	
	Correspondence Clerks and Order Clerks					2	
	Duplicating, Mail, and Other Office Machine Operators					2	
	Miscellaneous Administrative Support Occs, Incl Clerical					10	

Table O-3, continued. Current or Most Relevant Occupation

SOC CODE	OCCUPATION	1997	1998	1999	2000	Total	(%)*
50-52	**Service Occupations**	**76**	**42**	**22**	**38**	**178**	**(7.7)**
	Cleaning & Bldng Service Occs, exc Private Household					61	
	Food & Beverage Preparation & Service Occupations					29	
	Personal Service Occupations					26	
	Firefighting and Fire Prevention Occupations					25	
	Police and Detectives					16	
	Health Service Occupations					12	
	Guards					5	
	Launderers and Ironers					1	
	Private Household Cleaners and Servants					1	
	Private Household Occupations, NEC					1	
	Supervisors; Service Occupations, Protective					1	
55-56	**Agricultural Occupations**	**3**	**0**	**3**	**3**	**9**	**(0.4)**
	Related Agricultural Occupations					5	
	Farm Occupations, Except Managerial					3	
	Farmers (Working Proprietors)					1	
60-61	**Mechanics and Repairers**	**21**	**16**	**18**	**69**	**124**	**(5.4)**
	Miscellaneous Mechanics and Repairers					53	
	Vehicle & Mobile Eqpmnt Mechanics & Repairers					27	
	Industrial Machinery Repairers					23	
	Electrical and Electronic Equipment Repairers					17	
	Heating, Air-Conditioning, and Refrigeration Mechanics					3	
	Machinery Maintenance Occupations					1	
63-65	**Construction and Extractive Occupations**	**30**	**18**	**107**	**130**	**285**	**(12.3)**
	Plumbers, Pipefitters, and Steamfitters					68	
	Electricians and Power Transmission Installers					49	
	Other Construction Trades					40	
	Carpenters and Related Occupations					37	
	Painters, Paperhangers, and Plasterers					30	
	Brickmasons, Stonemasons, and Hard Tile Setters					29	
	Extractive Occupations, NEC					29	
	Explosive Workers					2	
	Supervisors; Extractive Occupations					1	
67-69	**Precision Production Occupations**	**9**	**13**	**27**	**44**	**93**	**(4.0)**
	Precision Metal Workers					58	
	Precision Workers; Assorted Materials					11	
	Power Plant Operators					7	
	Precision Printing Occupations					4	
	Water and Sewage Treatment Plant Operators					4	
	Precision Inspectors, Testers, and Related Workers					3	
	Precision Food Production Occupations					2	
	Supervisors; Precision Production Occupations					2	
	Precision Woodworkers					1	
	Miscellaneous Plant or System Operators					1	

Table O-3, continued. Current or Most Relevant Occupation

SOC CODE	OCCUPATION	1997	1998	1999	2000	Total	(%)*
71-78	**Production Working Occupation**	**94**	**50**	**57**	**115**	**316**	**(13.7)**
	Assemblers					82	
	Machine Operators & Tenders; Assorted Materials					66	
	Welders and Solderers					37	
	Metal & Plastic Processing Machine Ops & Tenders					25	
	Hand Working Occupations					22	
	Metalworking & Plastic Working Machine Setup Operators					18	
	Metalworking & Plastic Working Machine Ops & Tenders					16	
	Supervisors; Production Occupation					15	
	Textile, Apparel, & Furnishings Machine Ops & Tenders					11	
	Printing Machine Operators and Tenders					10	
	Production Inspectors, Checkers, and Examiners					5	
	Woodworking Machine Operators and Tenders					4	
	Fabricators, NEC					2	
	Metal Fabricating Machine Operators and Tenders					1	
	Printing Machine Setup Operators					1	
	Textile Machine Setup Operators					1	
81-83	**Transportation and Material Moving Occupations**	**19**	**15**	**20**	**63**	**117**	**(5.1)**
	Supervisors; Motorized Equipment Operators					38	
	Motor Vehicle Operators					33	
	Rail Transportation Occupations					24	
	Material Moving Equipment Operators					19	
	Water Transportation Occupations					3	
86-87	**Handlers, Equipment Cleaners, Helpers & Laborers**	**43**	**50**	**210**	**226**	**529**	**(22.9)**
	Freight, Stock and Material Movers; Hand					245	
	Miscellaneous Manual Occupations					209	
	Construction Laborers					54	
	Helpers; Machine Operators and Tenders					11	
	Vehicle Washers and Equipment Cleaners					4	
	Garage and Parking Lot Occupations					3	
	Helpers; Mechanics and Repairers					2	
	Supervisors; Handlers, Eqpmt Cleaners, Helpers & Laborers					1	
91	**Military Occupations**	**1**	**1**	**0**	**0**	**2**	**(0.1)**
99	**Miscellaneous/Missing Occupations**	**6**	**8**	**7**	**6**	**27**	**(1.2)**
	Total	**499**	**387**	**609**	**820**	**2,315**	

* Percents do not total 100 because of rounding.

Table O-4 - AOEC Occupational Cases Belonging to Unions, Excluding Asbestos-Related, 1997-2000 (N= 275)

Union Membership

Union Name	Total	(%)*
United **Automobile**, Aerospace & Agricultural Implement Workers of America	62	(22.5)
Bakery, Confectionery and Tobacco Workers Int'l Union	5	(1.8)
Int'l Brotherhood of **Boilermakers**, Iron Ship Builders, Blacksmiths, Forgers, and Helpers	2	(0.7)
United Brotherhood of **Carpenters** & Joiners of America	2	(0.7)
Communication Workers of America	5	(1.8)
National **Education** Association	7	(2.5)
Int'l Brotherhood of **Electrical Workers**	4	(1.5)
Int'l Union of **Elevator Constructors**	1	(0.4)
Int'l Association of **Fire Fighters**	6	(2.2)
FTC Construction	1	(0.4)
American Federation of **Government** Employees	1	(0.4)
Laborers Int'l Union	3	(1.1)
United **Mine Workers**	9	(3.3)
Federation of **Nurses and Health Practitioners**	2	(0.7)
Massachusetts **Nurses Assoc.**	17	(6.2)
Office and Professional Employees Int. Union	1	(0.4)
Int'l Union of **Operating Engineers**	6	(2.2)
Int'l Brotherhood of **Painters** and Allied Trades	3	(1.1)
United Assoc of Journeyman & Apprentices of the **Plumbing and Pipefitting** Industry	1	(0.4)
Federation of **Postal Police** Officers	1	(0.4)
American **Postal Workers** Union	2	(0.7)
Intl Allied **Printing Trades** Assoc.	1	(0.4)
Retail, Wholesale, and Dept Store Union	2	(0.7)
United Union of **Roofers,** Waterproofers and Allied Workers	1	(0.4)
Service Employees Int'l Union	1	(0.4)
Sheet Metal Workers' Int'l Association	1	(0.4)
American Federation of **State County & Municipal Employees**	5	(1.8)
United **Steel Workers** of America	1	(0.4)
American Federation of **Teachers**	6	(2.2)
Int'l Brotherhood of **Teamsters**, Chauffers, Warehouseman and Helpers of America	9	(3.3)
Amalgamated **Transit** Union	1	(0.4)
Transport Workers Union	1	(0.4)
United **Transportation** Union	1	(0.4)
National **Treasury Employees** Union	1	(0.4)
Unknown/Incomplete Union Name	103	(37.5)
Total	**275**	**(100.0)**

* Percents do not total to 100 due to rounding.

Table O-5 - AOEC Cases Related to Occupational Exposures, Other Than Asbestos, 1997-2000 (N= 2,315 cases, 2,507 hazards)

Occupational Hazards

HAZ CODE	HAZARD	FREQ.	(%) of HAZARDS
010	**MINERAL AND INORGANIC DUST**	**157**	**(6.3)**
010.00	Dust, NOS	31	(1.2)
010.03	Cement Dust	4	(0.2)
010.04	Carbon Black	1	(0.0)
010.06	Coal	28	(1.1)
010.08	Graphite	1	(0.0)
010.09	Man-Made Mineral Fibers	6	(0.2)
010.12	Silica, Amorphous	2	(0.1)
010.13	Silica, Crystalline	83	(3.3)
010.16	Ash, NOS	1	(0.0)
012	**TALCS**	**1**	**(0.0)**
012.00	Talc	1	(0.0)
020	**METALLOIDS**	**114**	**(4.5)**
020.00	Metal Fumes, NOS	4	(0.2)
020.01	Aluminum	2	(0.1)
020.05	Arsenic	1	(0.0)
020.08	Beryllium	2	(0.1)
020.12	Cadmium	7	(0.3)
020.14	Chromium, Not Hexavalent	1	(0.0)
020.15	Cobalt	2	(0.1)
020.16	Copper	1	(0.0)
020.21	Lead, Inorganic	50	(2.0)
020.22	Lead, Organic	2	(0.1)
020.24	Manganese	4	(0.2)
020.25	Mercury, Inorganic	4	(0.2)
020.26	Mercury, Organic	1	(0.0)
020.28	Nickel	2	(0.1)
020.37	Tungsten Carbide	1	(0.0)
020.39	Zinc	2	(0.1)
020.40	Zinc Chloride	1	(0.0)
020.46	Heavy Metals, NOS	1	(0.0)
020.47	Metals, NOS	4	(0.2)
020.48	Titanium	1	(0.0)
021	Metal Dust, NOS		
021	Metal Dust, NOS	2	(0.1)
022	Hexavalent Chromium Compounds		
022.03	Sodium Dichromate	1	(0.0)

Table O-5 - continued, Occupational Hazards

023	Welding Exposures		
023.00	Welding, NOS	16	(0.6)
023.04	Soldering Flux, NOS	1	(0.0)
030	**HALOGENS, INORGANIC**	**7**	**(0.3)**
030.02	Chlorine	5	(0.2)
030.04	Iodine	1	(0.0)
030.06	Chlorine Dioxide	1	(0.0)
040	**MISCELLANEOUS INORGANIC COMPOUNDS**	**21**	**(0.8)**
040.04	Carbon Monoxide	12	(0.5)
040.05	Fluxes, NOS	1	(0.0)
040.06	Hydrogen Sulfide	4	(0.2)
040.13	Phosphene	1	(0.0)
040.20	Sulfur Oxides	1	(0.0)
040.23	Thallium Salts	1	(0.0)
040.24	Irritant Gases, NOS	1	(0.0)
050	**ACIDS, BASES, AND OXIDIZING AGENTS**	**33**	**(1.3)**
050.00	Acids, Bases, Oxidizers, NOS	5	(0.2)
050.05	Calcium Oxide	3	(0.1)
050.10	Hydrochloric Acid	5	(0.2)
050.11	Hydrofluoric Acid	3	(0.1)
050.12	Hydrogen Peroxide	1	(0.0)
050.17	Potassium Hydroxide	3	(0.1)
050.18	Sodium Hydroxide	3	(0.1)
050.24	Sulfuric Acid	1	(0.0)
050.26	Acid Solder	1	(0.0)
050.32	Phosphorus Bromide	1	(0.0)
050.33	Acid & Base Mixture	1	(0.0)
050.34	Acetic Acid	2	(0.1)
050.38	Sodium Tripolyphosphate	1	(0.0)
052	Ammonia Compounds		
052.01	Ammonia Gas	1	(0.0)
052.03	Ammonium Salts	2	(0.1)
060	**ALIPHATIC AND ALICYCLIC HYDROCARBONS**	**23**	**(0.9)**
060.03	Heptane	1	(0.0)
060.05	Limonene	1	(0.0)
060.07	Mineral Oil	1	(0.0)
060.10	Turpentine	2	(0.1)
060.11	4-PC	3	(0.1)
060.17	Terpene	1	(0.0)
060.18	D-Limonene	1	(0.0)

Table O-5 - continued, Occupational Hazards

061	Petroleum Derivatives		
061.00	Petroleum Fractions	1	(0.0)
061.01	Petroleum Spirits	2	(0.1)
061.02	Naphtha	1	(0.0)
061.03	Kerosene	2	(0.1)
061.04	Gasoline	1	(0.0)
061.06	Diesel Fuel	3	(0.1)
061.07	Asphalt	3	(0.1)
070	**ALCOHOLS**	**1**	**(0.0)**
070.06	Isopropyl Alcohol	1	(0.0)
090	**GLYCOL ETHERS**	**2**	**(0.1)**
090.00	Glycol Ethers, NOS	1	(0.0)
090.01	Propylene Glycol Ethers	1	(0.0)
110	**EPOXY COMPOUNDS**	**8**	**(0.3)**
110.02	Epoxy Resins	4	(0.2)
110.04	Rosin	1	(0.0)
110.05	Paint, Epoxy	2	(0.1)
120	**ALDEHYDES AND ACETALS**	**21**	**(0.8)**
120.03	Formaldehyde	12	(0.5)
120.05	Glutaraldehyde	9	(0.4)
130	**KETONES**	**14**	**(0.6)**
130.00	Ketones, NOS	3	(0.1)
130.01	Acetone	2	(0.1)
130.03	Methyl Ethyl Ketone	8	(0.3)
130.05	Methyl N-Butyl Ketone	1	(0.0)
140	**ESTERS**	**11**	**(0.4)**
141	Acetates		
141.03	Ethyl Acetate	2	(0.1)
141.05	2-Ethoxyethyl Acetate	1	(0.0)
142	Acrylates		
142.00	Acrylates, NOS	5	(0.2)
142.01	Acrylic Monomer	1	(0.0)
142.04	Methyl Methacrylate	1	(0.0)
142.07	Cyanoacrylates, NOS	1	(0.0)
150	**CARBOXYLIC ACIDS AND ANHYDRIDES**	**3**	**(0.1)**
151	Anhydrides		
151.01	Phthalic Anhydride	2	(0.1)
151.08	Hexahydrophthalic Anhydride	1	(0.0)

Table O-5 - continued, Occupational Hazards

160	**AROMATIC HYDROCARBONS**	**25**	**(1.0)**
160.00	Aromatic Hydrocarbons, NOS	6	(0.2)
160.01	Benzene	2	(0.1)
160.02	Toluene	9	(0.4)
160.03	Xylene	4	(0.2)
160.04	Styrene	1	(0.0)
160.05	Naphthalene	1	(0.0)
160.08	Vinyl Toluene	1	(0.0)
161	Polycyclic Aromatic Hydrocarbons		
161.00	Polycyclic Aromatic Hydrocarbons, NOS	1	(0.0)
170	**HYDROCARBONS**	**125**	**(5.0)**
170.00	Hydrocarbons, NOS	5	(0.2)
170.01	Cutting Oils	26	(1.0)
170.02	Inks	1	(0.0)
170.03	Oils, NOS	3	(0.1)
170.06	Oil of Clove	1	(0.0)
171	Solvents, NOS		
171.00	Solvents, NOS	60	(2.4)
171.01	Paint	25	(1.0)
171.02	Thinner	2	(0.1)
171.03	Stripper	1	(0.0)
171.07	Lacquer	1	(0.0)
180	**PHENOLS AND PHENOLIC COMPOUNDS**	**4**	**(0.2)**
180.01	Creosote	1	(0.0)
180.03	Hydroquinone	2	(0.1)
180.04	Phenol	1	(0.0)
190	**HALOGENATED ALIPHATIC HYDROCARBONS (EXCEPT ORGANOCHLORINE PESTICIDES)**	**19**	**(0.8)**
190.00	Chlorinated Hydrocarbons, NOS	2	(0.1)
190.02	Chloroethane	1	(0.0)
190.08	Methyl Chloroform (1,1,1-trichloroethane)	1	(0.0)
190.09	Methylene Chloride	3	(0.1)
190.12	1,1,2-Trichloroethane	1	(0.0)
190.13	Trichloroethylene	6	(0.2)
192	Fluorocarbons		
192.01	Freon	4	(0.2)
200	**HALOGENATED AROMATIC HYDROCARBONS**	**1**	**(0.0)**
200.04	Chlorinated Dibenzodioxins	1	(0.0)

Table O-5 - continued, Occupational Hazards

210	**CYANIDES AND NITRILES**	**2**	**(0.1)**
211	Cyanides and Related Compounds		
211.00	Cyanides, NOS	1	(0.0)
211.03	Sodium Cyanide	1	(0.0)
220	**ISOCYANATES**	**37**	**(1.5)**
221	Diisocyanates		
221.00	Isocyanates, NOS	29	(1.2)
221.01	Toluene Diisocyanate	2	(0.1)
221.02	Methylene Diisocyanate	3	(0.1)
221.04	Hexamethylene Diisocyanate	3	(0.1)
230	**ALIPHATIC AND ALICYCLIC AMINES**	**4**	**(0.2)**
231	Ethanolamine		
231.00	Ethanolamines, NOS	2	(0.1)
232	Polyamines		
232.00	Polyamines, NOS	2	(0.1)
250	**AROMATIC NITRO AND AMINO COMPOUNDS (INCLUDING HETEROCYCLIC)**	**5**	**(0.2)**
250.14	Pyridine	2	(0.1)
250.17	Dyes, NOS	3	(0.1)
260	**ALIPHATIC (INCLUDING HETEROCYCLIC) AND MISCELLANEOUS NITROGEN COMPOUNDS**	**3**	**(0.1)**
260.10	Ethylenimine	1	(0.0)
260.27	Amyl Nitrite	1	(0.0)
261	Nitroglycerin and Related Compounds		
261.01	Nitroglycerin	1	(0.0)
270	**POLYMERS**	**48**	**(1.9)**
270.00	Polymers, NOS	4	(0.2)
270.01	Acrylics	1	(0.1)
270.02	Latex, Natural Rubber	24	(1.0)
270.06	Polyethylene, NOS	4	(0.2)
270.07	Polyurethane	2	(0.1)
270.09	Polyvinyl Chloride	3	(0.1)
270.10	Silicone	3	(0.1)
270.15	Resin Systems, NOS	2	(0.1)
270.20	Polystyrene	1	(0.0)
270.33	Polypropylene, Heated	1	(0.0)
270.36	Carbopol, NOS	1	(0.0)
271	Rubber		
271.00	Rubber, NOS	2	(0.1)

Table O-5 - continued, Occupational Hazards

280	**ORGANOCHLORINE PESTICIDES**	**2**	**(0.1)**
280.00	Organochlorine Pesticides, NOS	2	(0.1)
290	**ORGANOPHOSPHATE/CARBAMATE PESTICIDES**	**5**	**(0.2)**
291	Organophosphate Pesticides		
291.00	Organophosphate Pesticides, NOS	2	(0.1)
291.05	Chlorpyrifos	2	(0.1)
291.13	Monoammonium Phosphate	1	(0.0)
300	**ORGANIC PHOSPHATES (NON-PESTICIDE)**	**1**	**(0.0)**
300.00	Organic Phosphates, Nonpesticide	1	(0.0)
310	**ORGANIC SULFUR COMPOUNDS**	**1**	**(0.0)**
311	Mercaptans		
311.00	Mercaptans, NOS	1	(0.0)
320	**MISCELLANEOUS CHEMICALS AND MATERIALS, REFERENCED BY USE**	**283**	**(11.0)**
320.01	Air Pollutants, Indoor	144	(5.7)
320.06	Chemicals, NOS	51	(2.0)
320.07	Electroplating Chemicals, NOS	1	(0.0)
320.11	Glues, NOS	13	(0.5)
320.12	Hair Products	2	(0.1)
320.13	Herbicides, NOS	4	(0.2)
320.14	Lubricants, NOS	5	(0.2)
320.15	Odors	8	(0.3)
320.16	Pesticides, NOS	9	(0.4)
320.17	Photo Developing Chemicals, NOS	3	(0.1)
320.23	Perfume, NOS	1	(0.0)
320.25	Ninhydrin	2	(0.1)
320.27	Mace	1	(0.0)
320.34	Fingerprint Powder	1	(0.0)
321	Pharmaceutical Compounds		
321.00	Pharmaceuticals, NOS	2	(0.1)
321.29	Cyclophosphamide	1	(0.0)
322	Cleaning Materials		
322.00	Cleaning Materials, NOS	12	(0.5)
322.04	Cleaners, Household, General Purpose	1	(0.0)
322.07	Ammonia Solution, NOS	2	(0.1)
322.10	Bleach	5	(0.2)
322.16	Cleaners, Carpet	2	(0.1)
322.18	Cleaners, Detergent, NOS	1	(0.0)
322.19	Cleaners, Disinfectant, NOS	1	(0.0)
322.25	Cleaners, Oven	2	(0.1)
322.32	Quaternary Ammonium Compounds, NOS	2	(0.1)

Table O-5 - continued, Occupational Hazards

323	Waste		
323.00	Waste, NOS	4	(0.2)
324	Enzymes and Catalysts		
324.14	Lactase	1	(0.0)
326	Unknown Cause within a Defined Process		
326.01	Pickle Processing (Unknown Causal Agent)	1	(0.0)
327	Water Contamination		
327.00	Water Contamination, NOS	1	(0.0)
330	**PYROLYSIS PRODUCTS**	**66**	**(2.6)**
330.01	Cigarette Smoke	3	(0.1)
330.02	Plastic Smoke	2	(0.1)
330.03	Smoke, NOS	52	(2.1)
331	Exhaust		
331.00	Exhaust, NOS	3	(0.1)
331.01	Diesel Exhaust	5	(0.2)
331.02	Engine Exhaust	1	(0.0)
350	**PHYSICAL FACTORS**	**1,033**	**(41.2)**
350	Physical Factors		
350.00	Physical Factors, NOS	3	(0.1)
350.01	Noise	877	(35.0)
350.02	Cold	1	(0.0)
350.03	Heat	4	(0.2)
351	Ionizing Radiation		
351.04	Therapeutic Radiation	1	(0.0)
351.05	Uranium	1	(0.0)
352	Non-Ionizing Radiation		
352.04	Radiation, Ultraviolet	1	(0.0)
353	Trauma-Related Exposures		
353.00	Trauma, Acute, NOS	35	(1.4)
353.01	Electrical Shock	3	(0.1)
353.03	Fall, NOS	61	(2.4)
353.05	Motor Vehicle Accident	4	(0.2)
353.06	Struck by Motor Vehicle (Road)	3	(0.1)
353.08	Struck by Falling Object	11	(0.4)
353.09	Struck Against/Struck By Objects or Persons	15	(0.6)
353.10	Caught In or Between Objects	7	(0.3)
353.11	Cutting or Piercing Object, Except Blood-Contam.	1	(0.0)
353.12	Assault, Physical	2	(0.1)
354	Vibration		
354.00	Vibration, NOS	2	(0.1)
354.02	Vibration, Whole Body	1	(0.0)

Table O-5 - continued, Occupational Hazards

360	**ERGONOMIC FACTORS**	**353**	**(14.1)**
360.00	Ergonomic Factors, NOS	12	(0.5)
360.02	Keyboard Use	129	(5.1)
360.03	Repetitive Motion	84	(3.4)
360.04	Stress	3	(0.1)
360.06	Exercise	1	(0.0)
360.08	Walking	1	(0.0)
361	Force		
361.01	Forceful Movements, NOS	14	(0.6)
361.02	Lifting	76	(3.0)
361.03	Gripping, Forceful	4	(0.2)
362	Posture		
362.00	Posture, NOS	6	(0.2)
362.01	Posture, Upper Extremity	14	(0.6)
362.02	Posture, Body - Static	5	(0.2)
362.03	Posture, Body - Dynamic	7	(0.3)
370	**PLANT MATERIAL**	**23**	**(0.9)**
370.00	Plant Material, NOS	3	(0.1)
370.02	Cotton Dust	3	(0.1)
371	Flours		
371.00	Flour, NOS	4	(0.2)
371.04	Wheat Flour	3	(0.1)
373	Wood Dust		
373.00	Wood Dust, NOS	10	(0.4)
380	**ANIMAL MATERIAL**	**9**	**(0.4)**
380.00	Animal Material, NOS	3	(0.1)
380.04	Dander, Animal	1	(0.0)
380.05	Venom	1	(0.0)
380.07	Chicken	1	(0.0)
380.16	Avian Material, NOS	2	(0.1)
380.18	Rat Antigens	1	(0.0)
390	**MICROORGANISMS**	**44**	**(1.8)**
390.00	Microorganisms, NOS	1	(0.0)
390.01	Mold, NOS	20	(0.8)
390.02	Mycotoxins	1	(0.0)
390.07	Infectious Agents, NOS	1	(0.0)
390.09	Hepatitis B	1	(0.0)
390.10	Tuberculosis	18	(0.7)
390.16	Body Fluid Exposure (Unknown Infection Status)	2	(0.1)
000	**UNKNOWN/UNCLASSIFIABLE EXPOSURES**	**2**	**(0.1)**
	TOTAL	**2,507**	**(100.0)**

Table O-6 - Diagnoses and Exposures of 2,315 AOEC Cases Related to Occupational Exposures other than Asbestos, 1997-2000

2,617 Diagnoses and Related Exposures

DIAGNOSIS GROUP	# of Diagnoses in Group	
DIAGNOSIS (DX) Hazard	**# with Diagnosis** Hazard Freq	**(% of Cases)**
INFECTIOUS DISEASE	**23**	
Bacterial Infection, Secondary, NOS	**1**	**(0.0)**
Copper	1	
Hepatitis B	**1**	**(0.0)**
Hepatitis B	1	
Histoplasmosis	**1**	**(0.0)**
Avian Material, NOS	1	
Lyme Disease	**1**	**(0.0)**
Pesticides, NOS	1	
Sarcoidosis	**1**	**(0.0)**
Smoke, NOS	1	
+PPD	**18**	**(0.8)**
Tuberculosis	18	
TUMORS	**10**	
Bladder Cancer	**1**	**(0.0)**
Benzene	1	
Brain Cancer	**1**	**(0.0)**
Smoke, NOS	1	
Laryngeal Cancer	**2**	**(0.1)**
Exhaust, NOS	1	
Silica, Crystalline	1	
Lung Cancer	**2**	**(0.1)**
Silica, Crystalline	1	
Solvents, NOS	1	
Uranium	1	
Leukemia	**2**	**(0.1)**
Chloroethane	1	
Uranium	1	

Renal Cancer	**1**	**(0.0)**
Formaldehyde	1	
PSYCHIATRIC and NEUROLOGICAL DISORDERS	**44**	
Anxiety Disorders	**4**	**(0.2)**
Terpene	1	
Mercaptans, NOS	1	
Isocyanates, NOS	1	
Chemicals, NOS	1	
Glues, NOS	1	
Bell's Palsy	**1**	**(0.0)**
Pesticides, NOS	1	
Depression, NOS	**8**	**(0.3)**
Paint, NOS	2	
Chemicals, NOS	1	
Creosote	1	
Fall, NOS	1	
Lead, Organic	1	
Lead, Inorganic	1	
Mold, NOS	1	
Repetitive Motion	1	
Dystrophy Reflex Syndrome	**1**	**(0.0)**
Forceful Gripping	1	
Keyboard Use, NOS	1	
Encephalopathy, Anoxic	**1**	**(0.0)**
Carbon Monoxide	1	
Encephalopathy, Toxic	**12**	**(0.5)**
Solvents, NOS	5	
Chemicals, NOS	2	
Aromatic Hydrocarbons, NOS	1	
Carbon Monoxide	1	
Phosphine	1	
Smoke, NOS	1	
Toluene	1	
Xylene	1	
Meningitis	**2**	**(0.1)**
Chemicals, NOS	1	
Chlorine	1	
Neuropathy, Peripheral/Poly	**4**	**(0.2)**
Ergonomic Factors, NOS	1	
Lead, Inorganic	1	
Methyl N-Butyl Ketone	1	
Solvents, NOS	1	
Trichloroethylene	1	

Organic Brain Syndrome/Cognitive Disorder	**3**	**(0.1)**
Chemicals, NOS	1	
Freon	1	
Thallium Salts	1	
Parkinson's Disease	**1**	**(0.0)**
Manganese	1	
Polyneuropathy, Diabetic	**1**	**(0.0)**
Ergonomic Factors, NOS	1	
Post-Traumatic Stress Disorder	**2**	**(0.1)**
Chemicals, NOS	1	
Mace	1	
Post-Traumatic Headache Syndrome	**4**	**(0.2)**
Struck by Falling Object	3	
Struck by Motor Vehicle	1	
DISORDERS OF SENSORY ORGANS	**892**	
Conjunctivitis	**7**	**(0.3)**
Bleach	2	
Calcium Oxide	1	
Cement Dust	1	
Isocyanates, NOS	1	
Dust, NOS	1	
Formaldehyde	1	
Glycol Ethers, NOS	1	
Lubricants, NOS	1	
Eye Irritation**	**1**	**(0.0)**
Xylene	1	
Hearing Loss	**877**	**(37.9)**
Noise	876	
Coal	1	
Meniere's Disease	**1**	**(0.0)**
Toluene	1	
Optic Neuritis	**1**	**(0.0)**
Trichloroethylene	1	
Smell and Taste Disturbances	**3**	**(0.1)**
Air Pollutants, Indoor	1	
Chemicals, NOS	1	
Diesel Fuel	1	
Tinnitus	**2**	**(0.1)**
Noise	1	
Carbon Monoxide	1	

** *Many cases have been reported of eye irritation in combination with upper respiratory irritation. These cases are included with the respiratory diagnoses, and are not included here.*

CARDIOVASCULAR DISEASE	**6**	
Coronary Artery Disease	**2**	**(0.1)**
Carbon Monoxide	1	
Lifting	1	
Cor Pulmonale	**1**	**(0.0)**
Air Pollutants, Indoor	1	
Hypertension	**1**	**(0.0)**
Chemicals, NOS	1	
Phlebitis and Thrombophlebitis	**2**	**(0.1)**
Fall, NOS	1	
Trauma, Acute, NOS	1	
RESPIRATORY DISORDERS	**640**	
Asthma	**274**	**(11.8)**
Air Pollutants, Indoor	57	
Isocyanates, NOS	22	
Smoke, NOS	19	
Solvents, NOS	18	
Cutting Oils	13	
Paint	13	
Dust, NOS	12	
Chemicals, NOS	11	
Welding, NOS	8	
Latex, Natural Rubber	7	
Formaldehyde	5	
Glues, NOS	5	
Glutaraldehyde	5	
Mold, NOS	5	
Wood Dust, NOS	5	
Acrylates, NOS	4	
Cleaning Materials, NOS	3	
Epoxy Resins	3	
Flour, NOS	3	
Hexamethylene Diisocyanate	3	
Methyl Ethyl Ketone	3	
Methylene Diisocyanate	3	
Photo Developing Chemicals, NOS	3	
Polyvinyl Chloride	3	
Acids, Bases, Oxidizers, NOS	2	
Ammonia Solution	2	
Animal Material, NOS	2	
Aromatic Hydrocarbons, NOS	2	
Cobalt	2	
Hair Products	2	
Metal Fumes, NOS	2	
Ninhydrin	2	
Oils, NOS	2	
Polyethylene	2	
Resin Systems, NOS	2	
Rubber, NOS	2	

Asthma, Continued		
Silica, Crystalline	2	
Toluene Diisocyanate	2	
Toluene	2	
Acetic Acid	1	
Avian Material, NOS	1	
Calcium Oxide	1	
Carbon Black Dust	1	
Carbon Monoxide	1	
Cement Dust	1	
Chlorine	1	
Chromium, Not Hexavalent	1	
Cigarette Smoke	1	
Cleaners, Household, General Purpose	1	
Coal Dust	1	
Cotton Dust	1	
Cyanoacrylates	1	
Dander, Animal	1	
Diesel Fuel	1	
Ethylenimine	1	
Exhaust, NOS	1	
Fingerprint Powder	1	
Fluxes, NOS	1	
Freon	1	
Heavy Metals, NOS	1	
Herbicides, NOS	1	
Hexahydrophthalic Anhydride	1	
Lactase	1	
Lead, Inorganic	1	
Limonene	1	
D-Limonene	1	
Lubricants, NOS	1	
Man-Made Mineral Fibers	1	
Metal Dust, NOS	1	
Methyl Methacrylate	1	
Mycotoxins	1	
Nickel	1	
Paint, Epoxy	1	
Petroleum Spirits	1	
Pharmaceuticals, NOS	1	
Phenol	1	
Pickle Processing (Unknown Causal Agent)	1	
Plant Material, NOS	1	
Polyamines, NOS	1	
Polyurethane	1	
Silica, Amorphous	1	
Silicone	1	
Sodium Cyanide	1	
Sodium Hydroxide	1	
Stress	1	
Tungsten Carbide	1	
Vinyl Toluene	1	
Bronchiectasis	**1**	**(0.0)**
Air Pollutants, Indoor	1	

Bronchitis, Acute	**5**	**(0.2)**
Air Pollutants, Indoor	1	
Ammonia, Anhydrous	1	
Cleaning Materials, NOS	1	
Chemicals, NOS	1	
Dyes, NOS	1	
Metals, NOS	1	
Polymers, NOS	1	
Bronchitis, Chronic	**7**	**(0.3)**
Coal	2	
Ash, NOS	1	
Calcium Oxide	1	
Chemicals, NOS	1	
Dust, NOS	1	
Lime	1	
Wood Dust, NOS	1	
Bronchitis, NOS (including Asthmatic Bronchitis)	**22**	**(1.0)**
Chemicals, NOS	8	
Solvents, NOS	3	
Air Pollutants, Indoor	2	
Freon	2	
Chemical Dust, NOS	1	
Chlorine Dioxide	1	
Diesel Exhaust	1	
Hydrocarbons, NOS	1	
Inorganic Acids	1	
1,1,2-Trichloroethane	1	
Trichloroethylene	1	
Chronic Obstructive Pulmonary Disease (COPD)	**22**	**(1.0)**
Air Pollutants, Indoor	4	
Combustion Products	4	
Smoke, NOS	4	
Silica, Crystalline	3	
Dust, NOS	2	
Cement, NOS	1	
Chlorine Dioxide	1	
Diesel Exhaust	1	
Irritant Gases, NOS	1	
Metals, NOS	1	
Solvents, NOS	1	
Welding Fumes, NOS	1	
Emphysema	**14**	**(0.6)**
Silica, Crystalline	4	
Smoke, NOS	3	
Cutting Oils	2	
Chlorinated Hydrocarbons, NOS	1	
Exhaust, NOS	1	
Metal Dust, NOS	1	
Silica, Amorphous	1	
Solvents, NOS	1	
Titanium	1	
Turpentine	1	
Welding, NOS	1	

Extrinisic Allergic Alveolitis	**8**	**(0.3)**
Mold	3	
Cutting Oils	2	
Chicken	1	
Coolants	1	
Hydrogen Sulfide	1	
Interstitial Pulmonary Fibrosis	**6**	**(0.3)**
Chemicals, NOS	2	
Lifting	1	
Polymers, NOS	1	
Silica, Crystalline	1	
Solvents, NOS	1	
1,1,2-Trichloroethane	1	
Nasal Polyps	**2**	**(0.1)**
Asphalt	1	
Solvents, NOS	1	
Pleural Effusion	**1**	**(0.0)**
Latex, Natural Rubber	1	
Pneumoconiosis, Coal Workers'	**25**	**(1.1)**
Coal	25	
Pneumoconiosis Due to Other Silicate Dust (Silicosis)	**72**	**(3.1)**
Silica, Crystalline	72	
Pneumoconiosis Due to Other Inorganic Dust	**1**	**(0.0)**
Talc	1	
Pneumoconiosis Due to Other Organic Dust	**2**	**(0.1)**
Cotton Dust	2	
Pneumoconiosis Due to Mixed Dust, NOS	**2**	**(0.1)**
Smoke, NOS	1	
Welding Fumes, NOS	1	
Pneumonia	**1**	**(0.0)**
Struck Against/Struck By Objects (pneumonia secondary to trauma)	1	
Pneumonitis, Chemical	**3**	**(0.1)**
Smoke, NOS	2	
Paint	1	

Reactive Airways Disease (RADS)	**36**	**(1.6)**
Smoke, NOS	6	
Chemicals, NOS	3	
Mold, NOS	3	
Solvents, NOS	2	
Air Pollutants, Indoor	2	
Dust, NOS	2	
Freon	2	
Waxes, NOS	2	
Pesticides, NOS	2	
Trichloroethylene	2	
Acid and Base Mixture	1	
Acids, Bases, Oxidizers, NOS	1	
Carbon Monoxide	1	
Carbopol	1	
Chlorinated Hydrocarbons, NOS	1	
Chlorine Dioxide	1	
Cleaning Materials, NOS	1	
Coal Tar	1	
Dursban	1	
Ethanolamines, NOS	1	
Glues, NOS	1	
Glutaraldehyde	1	
Hydrochloric Acid	1	
Isocyanates, NOS	1	
Methyl Ethyl Ketone	1	
Naphthalene	1	
Phosphorus Bromide	1	
Potassium Hydroxide	1	
Sodium Hypochlorite	1	
Sodium Tripolyphosphate	1	
Trichloroethylene	1	
Volatile Organic Chemicals, NOS	1	
Restrictive Pulmonary Function	**3**	**(0.1)**
Hydrogen Fluoride	1	
Hydrogen Peroxide	1	
Hydrogen Sulfide	1	
Solvents, NOS	1	
Upper Respiratory Irritation, Acute	**2**	**(0.1)**
Lacquer	1	
Paint Thinner	1	
X-Ray Developer	1	
Upper Respiratory Irritation, Chronic or NOS (Sinusitis/rhinitis/pharyngitis/laryngitis)	**124**	**(5.4)**
Air Pollutants, Indoor	33	
Mold	8	
Paint	7	
Chemicals, NOS	6	
Dust, NOS	6	
Solvents, NOS	6	
Smoke, NOS	4	
Cutting Oils	3	
Formaldehyde	3	

Upper Respiratory Irritation, Chronic or NOS, Continued		
Hydrochloric Acid	3	
Hydroquinone	3	
Methyl Ethyl Ketone	3	
Ammonium Salts	2	
Cleaning Materials, NOS	2	
Ethyl Acetate	2	
Glutaraldehyde	2	
Latex, Natural Rubber	2	
Odors	2	
Phthalic Anhydride	2	
Plant Material, NOS	2	
Toluene	2	
Wood Dust, NOS	2	
Acetic Acid	1	
Acids, Bases, Oxidizers, NOS	1	
Animal Material, NOS	1	
Aromatic Hydrocarbons, NOS	1	
Asphalt	1	
Bleach	1	
Cigarette Smoke	1	
Cotton Dust	1	
Diesel Exhaust	1	
Electroplating Chemicals, NOS	1	
Epoxy Resins	1	
Flour, NOS	1	
Glues, NOS	1	
Heat	1	
Isocyanates, NOS	1	
Ketones, NOS	1	
Kerosene	1	
Mace	1	
Man-Made Mineral Fibers	1	
Metal Fumes, NOS	1	
Methylene Chloride	1	
Microorganisms, NOS	1	
Naphtha	1	
Oils, NOS	1	
Petroleum Spirits	1	
Plastic Smoke	1	
Polyethylene	1	
Polymers, NOS	1	
Potassium Hydroxide	1	
Propylene Glycol Ethers	1	
Quaternary Ammonium Compounds	1	
Rosin	1	
Sodium Hydroxide	1	
Sulfur Oxides	1	
Sulfuric Acid	1	
Stripper	1	
Welding, NOS	1	
Xylene	1	
Vocal Chord/Larynx Disorders	**3**	**(0.1)**
Air Pollutants, Indoor	2	
Smoke, NOS	1	

Non-Specific Respiratory Disorders	**4**	**(0.2)**
Smoke, NOS	2	
Paint Thinner	1	
Zinc Chloride	1	
GASTROINTESTINAL DISORDERS	**2**	
Gastroesophageal Reflux Disease	**1**	**(0.0)**
Isocyanates, NOS	1	
Polyurethane	1	
Gastrointestinal Disorders, NOS	**1**	**(0.0)**
Solvents, NOS	1	
ENDOCRINE, NUTRITIONAL, METABOLIC, AND IMMUNE	**4**	
Deficiency Anemia (Other than Iron)	**1**	**(0.0)**
Manganese	1	
Hemorrhagic Disorder	**1**	**(0.0)**
Infectious Agents, NOS	1	
Hypothyroidism, Acquired	**1**	**(0.0)**
Therapeutic Radiation	1	
Other Unspecified Disorder	**1**	**(0.0)**
Stress	1	
RENAL DISORDERS	**2**	
Acute Renal Failure, NOS	**1**	**(0.0)**
Chemicals, NOS	1	
Acute Renal Failure with Acute Tubular Necrosis	**1**	**(0.0)**
Cadmium	1	
REPRODUCTIVE DISORDERS	**3**	
Azoospermia	**1**	**(0.0)**
2-Ethoxyethyl Acetate	1	
Pregnancy Complication	**2**	**(0.1)**
Amyl Nitrite	1	
Cyanides, NOS	1	
Pesticides, NOS	1	

SKIN DISORDERS	76	
Cellulitis	**1**	**(0.0)**
Struck by Falling Object	1	
Skin Infection, NOS	**4**	**(0.2)**
Cyclophosphamide	1	
Glues, NOS	1	
Paint	1	
Stress	1	
Dermatitis, Allergic	**47**	**(2.0)**
Latex, Natural Rubber	15	
Man-Made Mineral Fibers	4	
Air Pollutants, Indoor	2	
Chemicals, NOS	2	
Cutting Oils	2	
Lubricants, NOS	2	
Acrylates, NOS	1	
Acrylics	1	
Chlorine	1	
Cleaning Materials, NOS	1	
D-Limonene	1	
Dust, NOS	1	
Epoxy Resins	1	
Ethanolamines, NOS	1	
Formaldehyde	1	
Glutaraldehyde	1	
Herbicides, NOS	1	
Isocyanates, NOS	1	
Methyl Ethyl Ketone	1	
Methylene Chloride	1	
Organic Phosphates, Nonpesticide	1	
Pesticides, NOS	1	
Plastic Smoke	1	
Polyamines, NOS	1	
Polypropylene, Heated	1	
Polystyrene	1	
Quaternary Ammonium Compounds, NOS	1	
Radiation, Ultraviolet	1	
Unspecified	1	
Dermatitis, Irritant	**7**	**(0.3)**
Air Pollutants, Indoor	1	
Chemicals, NOS	1	
Cleaning Materials, NOS	1	
Ethylenimine	1	
Glues, NOS	1	
Pesticides, NOS	1	
Trichloroethylene	1	

Dermatitis, NOS	**6**	**(0.3)**
Air Pollutants, Indoor	1	
Cutting Oils	1	
Dust, NOS	1	
Dyes, NOS	1	
Herbicides, NOS	1	
Lubricants, NOS	1	
Dermatitis, Seborrheic	**1**	**(0.0)**
Glues, NOS	1	
Folliculitis	**1**	**(0.0)**
Mineral Oil	1	
Uticaria	**8**	**(0.3)**
Air Pollutants, Indoor	1	
Cleaners, Disinfectant, NOS	1	
Iodine	1	
Latex, Natural Rubber	1	
Mycotoxins	1	
Nickel	1	
Sodium Dichromate	1	
Other Skin Abnormalities	**2**	**(0.1)**
Dioxin	1	
Dust, NOS	1	
Water Contamination, NOS	1	

ACUTE and CHRONIC MUSCULOSKELETAL DISORDERS	**558**

MUSCULOSKELETAL PROBLEMS - CHEST (3)

Costochondritis	**2**	**(0.1)**
Fall, NOS	1	
Keyboard Use	1	
Sprains/Strains/Tears of Chest	**1**	**(0.0)**
Fall, NOS	1	
Keyboard Use	1	

LOW BACK PROBLEMS (131)

Degenerative Joint Disease - Lumbar	**4**	**(0.2)**
Posture, Body- Dynamic	2	
Posture, Body- Static	1	
Trauma, Acute, NOS	1	
Herniated Disc - Lumbar	**15**	**(0.6)**
Heavy Lifting	7	
Fall, NOS	3	
Trauma, Acute, NOS	3	
Posture, Body- Dynamic	1	
Posture, NOS	1	

Pain - Low Back	**33**	**(1.4)**
Trauma, Acute, NOS	17	
Heavy Lifting	8	
Repetitive Motion	4	
Posture, Body, Static	3	
Fall, NOS	2	
Struck by Falling Object	1	
Posture, Upper Extremity	1	
Radiculopathy - Lumbar	**4**	**(0.2)**
Heavy Lifting	2	
Fall, NOS	1	
Posture, Body- Static	1	
Sprains/Strains/Tears - Lower Back or Back, NOS	**75**	**(3.2)**
Lifting	27	
Fall, NOS	21	
Forceful Movements, NOS	5	
Repetitive Motion	4	
Keyboard Use	3	
Motor Vehicle Accident	3	
Physical Factors, NOS	3	
Struck by Falling Object	3	
Posture, Body- Dynamic	2	
Assault, Physical	1	
Ergonomics, NOS	1	
Unspecified	1	

NECK/UPPER BACK PROBLEMS (36)

Degenerative Joint Disease, Cervical/Thoracic	**1**	**(0.0)**
Repetitive Motion	1	
Herniated Disc - Cervical	**3**	**(0.1)**
Lifting	1	
Posture, Body- Static	1	
Trauma, Acute, NOS	1	
Herniated Disc- Thoracic	**1**	**(0.0)**
Lifting	1	
Pain/Spasms - Trapezius/Neck/Cervical	**11**	**(0.5)**
Keyboard Use	5	
Fall, NOS	3	
Ergonomic Factors, NOS	2	
Heavy Lifting	1	
Struck Against/Struck by Objects or Persons	1	
Radiculopathy - Cervical	**2**	**(0.1)**
Keyboard Use	1	
Struck Against/Struck by Objects or Persons	1	

Sprains/Strains/Tears - Neck/Upper Back	**18**	**(0.8)**
Heavy Lifting	5	
Fall, NOS	3	
Forceful Movements, NOS	2	
Struck Against/Struck by Objects or Persons	2	
Gripping, Forceful	1	
Keyboard Use	1	
Motor Vehicle Accident	1	
Posture, Upper Extremity	1	
Struck by Falling Object	1	
Struck by Motor Vehicle	1	

LOWER EXTREMITY PROBLEMS (39)

Plantar Fasciitis	**2**	**(0.1)**
Fall, NOS	1	
Walking	1	
Sprain/Strains/Tears - Ankle/Foot	**5**	**(0.2)**
Fall, NOS	5	
Sprains/Strains/Tears - Gluteus/Hamstring/Leg	**11**	**(0.5)**
Fall, NOS	8	
Forceful Movements, NOS	1	
Lifting	1	
Struck Against/Struck by Objects or Persons	1	
Sprains/Strains/Tears - Knee	**5**	**(0.2)**
Struck by Falling Object	3	
Fall, NOS	2	
Neuropathy, Other, Lower Extremity	**2**	**(0.1)**
Keyboard Use	2	
Osteoarthritis, Knee	**3**	**(0.1)**
Fall, NOS	1	
Repetitive Motion	1	
Struck by Motor Vehicle	1	
Joint Pain, Hip	**1**	**(0.0)**
Posture, Body- Dynamic	1	
Repetitive Motion	1	
Knee Effusion	**1**	**(0.0)**
Trauma, Acute, NOS	1	
Sciatica	**6**	**(0.3)**
Fall, NOS	2	
Repetitive Motion	2	
Forceful Movements, NOS	1	
Lifting	1	
Posture, NOS	1	
Vibration, NOS	1	
Tendinitis/Bursitis, Lower Extremity	**3**	**(0.1)**
Fall, NOS	2	
Physical Factors, NOS	1	

UPPER EXTREMITY PROBLEMS - ARM/HAND/WRIST (251)

Carpel Tunnel Syndrome and Median Nerve Neuropathy	**75**	**(3.3)**
Keyboard Use	36	
Repetitive Motion	32	
Lifting	5	
Posture, Upper Extremity	3	
Cleaners, Carpet	1	
Cutting Oils	1	
Electrical Shock	1	
Ergonomic Factors, NOS	1	
Gripping, Forceful	1	
Physical Factors, NOS	1	
Posture, NOS	1	
Trauma, Acute, NOS	1	
Vibration, NOS	1	
Vibration, Regional	1	
Welding, NOS	1	
DeQuervain's Disease	**14**	**(0.6)**
Keyboard Use, NOS	5	
Repetitive Motion	4	
Lifting	3	
Ergonomic Factors, NOS	1	
Forceful Movements, NOS	1	
Posture, Upper Extremity	1	
Struck Against/Struck by Objects or Persons	1	
Epicondylitis	**32**	**(1.4)**
Keyboard Use, NOS	18	
Repetitive Motion, NOS	6	
Gripping, Forceful	2	
Posture, Upper Extremity	2	
Electrical Shock	1	
Ergonomic Factors, NOS	1	
Lifting	1	
Posture, Body- Static	1	
Struck Against/Struck by Objects or Persons	1	
Ganglion Cyst, Hand/Wrist	**4**	**(0.2)**
Repetitive Motion	3	
Keyboard Use	2	
Heavy Lifting	1	
Fall, NOS	1	
Sprains/Strains/Tears – Arm/Forearm	**2**	**(0.1)**
Keyboard Use	2	

Sprains/Strains/Tears - Wrist/Hand/Fingers	**35**	**(1.5)**
Keyboard Use	21	
Ergonomic Factors, NOS	3	
Fall, NOS	3	
Repetitive Motion	2	
Caught In or Between Objects	1	
Forceful Movements, NOS	1	
Gripping, Forceful	1	
Posture, Body- Static	1	
Posture, NOS	1	
Posture, Upper Extremity	1	
Struck Against/Struck by Objects or Persons	1	
Struck by Falling Object	1	
Tendinitis/Tenosynovitis/Bursitis - Forearm/Wrist/Hand/Fingers	**51**	**(2.2)**
Keyboard Use	33	
Repetitive Motion	7	
Lifting	6	
Fall, NOS	2	
Caught In or Between Objects	1	
Ergonomic Factors, NOS	1	
Gripping, Forceful	1	
Posture, Body- Dynamic	1	
Posture, Upper Extremity	1	
Struck by Falling Object	1	
Ulnar Neuropathy	**14**	**(0.6)**
Keyboard Use	8	
Posture, Upper Extremity	3	
Trauma, Acute, NOS	2	
Ergonomic Factors, NOS	2	
Repetitive Motion	1	
Joint Pain, Wrist/Hand	**2**	**(0.1)**
Keyboard Use	1	
Posture, Upper Extremity	1	
Joint Derangement, Elbow	**1**	**(0.0)**
Trauma, Acute, NOS	1	
Unspecified Cumulative Trauma Disorders or Musculoskeletal Pain, Upper Extremity	**21**	**(0.9)**
Keyboard Use	13	
Repetitive Motion	8	
ABDOMINAL MUSCULOSKELETAL PROBLEMS (3)		
Inguinal Hernia	**2**	**(0.1)**
Heavy Lifting	2	
Umbilical Hernia	**1**	**(0.0)**
Heavy Lifting	1	

UPPER EXTREMITY PROBLEMS - SHOULDER (61)

Sprains/Strains/Tears of Biceps/Shoulder/Rotator Cuff	**28**	**(1.2)**
Lifting	7	
Repetitive Motion	4	
Fall, NOS	4	
Forceful Movements, NOS	4	
Keyboard Use	3	
Posture, Body- Upper Extremity	2	
Struck by Falling Object	2	
Assault, Physical	1	
Posture, Body- Static	1	
Struck Against/Struck by Objects or Persons	2	
Trauma, Acute, NOS	1	
Thoracic Outlet Syndrome	**13**	**(0.6)**
Keyboard Use	11	
Fall, NOS	1	
Ergonomic Factors, NOS	1	
Posture, NOS	1	
Posture, Upper Extremity	1	
Impingement Syndrome/Frozen Shoulder	**3**	**(0.1)**
Keyboard Use	1	
Repetitive Motion	1	
Trauma, Acute, NOS	1	
Rotator Cuff Syndrome	**15**	**(0.6)**
Keyboard Use	6	
Repetitive Motion	5	
Posture, Upper Extremity	3	
Fall, NOS	2	
Lifting	2	
Forceful Movements, NOS	1	
Gripping, Forceful	1	
Struck by Falling Object	1	
Joint Pain, Shoulder	**2**	**(0.1)**
Posture, Upper Extremity	1	
Repetitive Motion	1	

CTDs OR MUSCULOSKELETAL PAIN, LOCATION NOT SPECIFIED (34)

Osteoarthritis, NOS	**2**	**(0.1)**
Trauma, Acute, NOS	1	
Struck Against/Struck by Objects or Persons	1	
Tendinitis/Bursitis/Tenosynovitis, NOS	**4**	**(0.2)**
Keyboard Use	3	
Repetitive Motion	2	
Ergonomic Factors, NOS	1	

Strains/Sprains/Tears, NOS	**13**	**(0.6)**
Repetitive Motion	10	
Trauma, Acute, NOS	2	
Forceful Movements, NOS	1	
Keyboard Use	1	
Lifting	1	
Posture, NOS	1	
Posture, Upper Extremity	1	
Connective Tissue Disease, NOS	**5**	**(0.2)**
Air Pollutants, Indoor	1	
Chemicals, NOS	1	
Paint, Epoxy	1	
Silica, Crystalline	1	
Silicone	1	
Joint Derangements, NOS	**1**	**(0.0)**
Keyboard Use	1	
Trauma, Acute, NOS	1	
Inflammatory Spondylopathy	**1**	**(0.0)**
Posture, Body- Static	1	
Repetitive Motion	1	
Back Disorders, NOS	**2**	**(0.1)**
Cold	1	
Exercise	1	
Lifting	1	
Repetitive Motion	1	
Unspecified Cumulative Trauma Disorders, Fibromyalgia, or Musculoskeletal Pain, Location not Specified	**6**	**(0.3)**
Keyboard Use	2	
Air Pollutants, Indoor	1	
Aluminum	1	
Fall, NOS	1	
Repetitive Motion	1	
SYMPTOMS AND ILL-DEFINED CONDITIONS	**122**	
Abnormal Blood Test Results	**3**	**(0.1)**
Toluene	2	
Pyridine	1	
Abdominal Cramps	**1**	**(0.0)**
Pesticides, NOS	1	
Chest Pain	**2**	**(0.1)**
Aluminum	1	
Cleaning Materials, NOS	1	

Cough	**4**	**(0.2)**
Air Pollutants, Indoor	1	
Formaldehyde	1	
Graphite	1	
Hydrocarbons, NOS	1	
Man-Made Mineral Fibers	1	
Smoke, NOS	1	
Dizziness	**4**	**(0.2)**
Aromatic Hydrocarbons, NOS	1	
Mercaptans, NOS	1	
Paint	1	
Terpene	1	
Trauma, Acute, NOS	1	
Nausea	**1**	**(0.0)**
Air Pollutants, Indoor	1	
Shortness of Breath	**6**	**(0.3)**
Aluminum	1	
Body Fluid Exposure (Unknown Infection Status)	1	
Chlorine	1	
Dust, NOS	1	
Glues, NOS	1	
Solvents, NOS	1	
Hoarseness	**1**	**(0.0)**
Air Pollutants, Indoor	1	
Headache, NOS	**25**	**(1.1)**
Air Pollutants, Indoor	6	
Carbon Monoxide	2	
Chemicals, NOS	2	
Formaldehyde	2	
Smoke, NOS	2	
Aromatic Hydrocarbons, NOS	1	
Cleaners, Carpet	1	
Diesel Fuel	1	
Electrical Shock	1	
Electroplating Chemicals, NOS	1	
Hydrocarbons, NOS	1	
Hydrogen Sulfide	1	
Lead, Organic	1	
Nitroglycerine	1	
Struck Against/Struck By Objects or Persons	1	
Soldering Flux, NOS	1	
Solvents, NOS	1	
Turpentine	1	
Xylene	1	
Headache, Migraine	**10**	**(0.4)**
Air Pollutants, Indoor	4	
Odors	2	
Asphalt	1	
Solvents, NOS	1	
Styrene	1	
Toluene	1	

Paresthesia	**2**	**(0.1)**
Air Pollutants, Indoor	1	
Keyboard Use	1	
Syncope	**1**	**(0.0)**
Isocyanates, NOS	1	
Fatigue	**9**	**(0.4)**
Solvents, NOS	2	
Air Pollutants, Indoor	1	
Chlorine	1	
Chlorpyrifos	1	
Gasoline	1	
Hydrogen Sulfide	1	
Infectious Agents, NOS	1	
Pesticides, NOS	1	
Sick Building Syndrome	**48**	**(2.1)**
Air Pollutants, Indoor	38	
Dust, NOS	3	
Hydrocarbons, NOS	3	
Glues, NOS	2	
Wood Dust, NOS	2	
Cleaners, Detergent, NOS	1	
Glutaraldehyde	1	
Metals, NOS	1	
Methyl N-Butyl Ketone	1	
Mold, NOS	1	
Rat Antigens	1	
Smoke, NOS	1	
Welding, NOS	1	
Symptoms, NOS	**5**	**(0.2)**
Acid, NOS	1	
Asphalt	1	
Chemicals, NOS	1	
Mercury, Inorganic	1	
Pesticides, NOS	1	
Welding, NOS	1	
CHEMICAL POISONINGS/SYNDROMES	**105**	
Metal Fume Fever	**2**	**(0.1)**
Metals, NOS	1	
Zinc Oxide	1	
Toxic Effects of Aromatics, Acids, and Caustic Chemicals	**1**	**(0.0)**
Hydrochloric Acid	1	
Toxic Effects of Carbon Monoxide	**6**	**(0.2)**
Carbon Monoxide	6	

Toxic Effects of Gas/Fumes/Vapors and Miscellaneous Chemicals	**14**	**(0.6)**
Carbon Monoxide	2	
Smoke, NOS	2	
Acrylic Monomer	1	
Air Pollutants, Indoor	1	
Arsenic	1	
Cement Dust	1	
Glues, NOS	1	
Hydrogen Sulfide	1	
Odors	1	
Petroleum Fractions, NOS	1	
Petroleum Spirits	1	
Pyridine	1	
Vinyl Toluene	1	
Toxic Effect of Lead	**42**	**(1.8)**
Lead, Inorganic	41	
Paint	1	
Toxic Effect of Other Metals	**11**	**(0.5)**
Mercury, Inorganic	3	
Beryllium	2	
Manganese	2	
Mercury, Organic	1	
Silver	1	
Smoke, NOS	1	
Zinc	1	
Toxic Effects of Pesticides	**7**	**(0.3)**
Organochlorine Pesticides, NOS	2	
Organophosphate Pesticides, NOS	2	
Chlorpyrifos	1	
Monoammonium Phosphate	1	
Pesticides, NOS	1	
Toxic Effect of Solvents	**23**	**(1.0)**
Solvents, NOS	6	
Toluene	3	
Ketones, NOS	2	
Methyl Ethyl Ketone	2	
Methylene Chloride	2	
Acetone	1	
Aromatic Hydrocarbons, NOS	1	
Asphalt	1	
Chemicals, NOS	1	
Epoxy Resins	1	
Glues, NOS	1	
Heptane	1	
Hydrocarbons, NOS	1	
Isocyanates, NOS	1	
Isopropyl Alcohol	1	
Kerosene	1	
Methyl Chloroform	1	
Polyurethane	1	
Toluene Diisocyanate	1	
Trichloroethylene	1	
Xylene	1	

Toxic Effects of Venom	**1**	**(0.0)**
Snake Bite	1	
TRAUMATIC INJURIES, NOT INCLUDING MUSCULOSKELETAL AND EYE	**54**	
Burns, Lower Extremity	**1**	**(0.0)**
Potassium Hydroxide	1	
Burns, Multiple/Unspecified	**4**	**(0.2)**
Hydrofluoric Acid	2	
Heat	1	
Sodium Hydroxide	1	
Burns, Upper Extremity	**5**	**(0.2)**
Heat	2	
Electrical Shock	1	
Cleaners, Oven	1	
Welding, NOS	1	
Concussion	**1**	**(0.0)**
Trauma, Acute, NOS	1	
Contusion/Abrasion Head and Scalp	**3**	**(0.1)**
Struck Against/Struck by Objects or Persons	3	
Contusion/Abrasion Lower Extremity	**6**	**(0.3)**
Fall, NOS	4	
Struck by Falling Object	1	
Struck by Motor Vehicle	1	
Contusion/Abrasion Trunk	**6**	**(0.3)**
Fall, NOS	3	
Struck Against/Struck by Objects or Persons	2	
Motor Vehicle Accident	1	
Contusion/Abrasion Upper Extremity	**10**	**(0.4)**
Fall, NOS	5	
Struck Against/Struck by Objects or Persons	2	
Caught In or Between Objects	2	
Gripping, Forceful	1	
Crush Injury Foot/Toe	**1**	**(0.0)**
Struck Against/Struck by Objects or Persons	1	
Dislocation, Lower Extremity	**2**	**(0.1)**
Fall, NOS	1	
Posture, Body- Static	1	
Struck by Motor Vehicle	1	
Trauma, Acute, NOS	1	
Fracture, Lower Extremity	**2**	**(0.1)**
Caught In or Between Objects	1	
Fall, NOS	1	

Fracture, Trunk	**4**	**(0.2)**
Fall, NOS	2	
Struck Against/Struck by Objects or Persons	1	
Trauma, Acute, NOS	1	
Fracture, Upper Extremity	**3**	**(0.1)**
Caught In or Between Objects	2	
Fall, NOS	1	
Laceration, Head	**1**	**(0.0)**
Struck Against/Struck by Objects or Persons	1	
Laceration, Upper Extremity	**3**	**(0.1)**
Fall, NOS	1	
Caught In or Between Objects	1	
Cutting or Piercing, Object (except blood-contam. Sharps)	1	
Penetrating Abdominal Wound	**1**	**(0.0)**
Trauma, Acute, NOS	1	
Trauma, Lower Extremity, NOS	**1**	**(0.0)**
Struck by Falling Object	1	
MISCELLANEOUS CONDITIONS	**75**	
Angioedema	**5**	**(0.2)**
Air Pollutants, Indoor	2	
Latex, Natural Rubber	2	
Solvents, NOS	1	
Multiple Chemical Sensitivity	**70**	**(3.0)**
Air Pollutants, Indoor	21	
Hydrocarbons, NOS	13	
Chemicals, NOS	11	
Odors	3	
4-Phenylcyclohexene	3	
Cleaning Materials, NOS	2	
Dust, NOS	2	
Isocyanates, NOS	2	
Latex, Natural Rubber	2	
Acetone	1	
Animal Material, NOS	1	
Anthracene	1	
Body Fluid Exposure (Unknown Infection Status)	1	
Carbon Black	1	
Cigarette Smoke	1	
Cleaners, Oven	1	
Diesel Exhaust	1	
Dyes, NOS	1	
Engine Exhaust	1	
Formaldehyde	1	
Herbicides, NOS	1	
Inks	1	
Kerosene	1	
Paint	1	
Perfume, NOS	1	

Multiple Chemical Sensitivity, continued	
Pesticides, NOS	1
Pharmaceuticals, NOS	1
Photo Developing Chemicals, NOS	1
Plant Material, NOS	1
Rubber, NOS	1
Smoke, NOS	1
Sodium Dichromate	1
Stress	1

Table O-7 - 640 AOEC Respiratory Diagnoses[+] Related to Occupational Exposures other than Asbestos, by Hazard Category, 1997-2000

720 Respiratory Diagnosis-Hazard Relationships

HAZARD CATEGORY			# of dx related to Haz Cat
Haz Code	**Hazard**	Diagnosis (dx)	# of dx related to hazard
MINERAL AND INORGANIC DUSTS			**143**
010.00	**Dust, NOS**		**24**
		Asthma	13
		Upper Respiratory Irritation, Chronic or NOS	7
		COPD	3
		RADS	1
010.03	**Cement Dust**		**2**
		Asthma	1
		COPD	1
010.04	**Carbon Black**		**1**
		Asthma	1
010.06	**Coal**		**28**
		Pneumoconiosis, Coal Workers'	25
		Bronchitis, Chronic	2
		Asthma	1
010.09	**Man-Made Mineral Fibers**		**2**
		Asthma	1
		Upper Respiratory Irritation, Chronic or NOS	1
010.12	**Silica, Amorphous**		**2**
		Asthma	1
		Emphysema	1
010.13	**Silica, Crystalline**		**82**
		Silicosis	72
		Emphysema	4
		COPD	3
		Asthma	2
		Interstitial Pulmonary Fibrosis	1

+ Not including respiratory symptoms such as cough or shortness of breath (see Table 0-6, "Symptoms and Ill-Defined Conditions").

& Each diagnosis may be related to as many as three hazards. Thus a single diagnosis may appear up to three times in this table. There are 640 unique respiratory diagnoses (see Table 0-6).

* Known asthma inducer, as defined by M. Chan-Yeung and J-L Malo, in *Asthma*, Barnes et al. (eds), Raven Press, 1997.

** Some hazards in this group are known asthma inducers, as defined above.

010.16	**Ash, NOS**	**1**
	Bronchitis, Chronic	1
Talcs		
012.00	**Talc, NOS**	**1**
	Pneumoconiosis, Other Inorganic Dust	1
METALS AND METALLOIDS		**29**
020.00	**Metal Fumes, NOS**	**4**
	Asthma	2
	COPD	1
	Upper Respiratory Irritation, Chronic or NOS	1
020.14	**Chromium, Not Hexavalent ***	**1**
	Asthma	1
020.15	**Cobalt ***	**2**
	Asthma	2
020.21	**Lead, Inorganic**	**1**
	Asthma	1
020.28	**Nickel ***	**1**
	Asthma	1
020.37	**Tungsten Carbide ***	**1**
	Asthma	1
020.40	**Zinc Chloride**	**1**
	Non-Specific Respiratory Disorder	1
020.46	**Heavy Metals, NOS**	**1**
	Asthma	1
020.47	**Metals, NOS**	**2**
	Asthma	1
	Bronchitis, Acute	1
020.48	**Titanium**	**1**
	Emphysema	1
Metal Dust, NOS		
021.00	**Metal Dust, NOS**	**2**
	Asthma	1
	Emphysema	1
Welding Exposures		
023.00	**Welding, NOS**	**12**
	Asthma	8
	Pneumoconiosis, Mixed Dust, NOS	1
	COPD	1
	Emphysema	1
	Upper Respiratory Irritation, Chronic or NOS	1

HALOGENS (INORGANIC)		**3**
030.02	**Chlorine**	**1**
	Asthma	1
030.06	**Chlorine Dioxide**	**2**
	Asthma	1
	Bronchitis, NOS (including Asthmatic Bronchitis)	1
MISCELLANEOUS INORGANIC COMPOUNDS		**7**
040.04	**Carbon Monoxide**	**2**
	Asthma	1
	RADS	1
040.05	**Fluxes, NOS**	**1**
	Asthma	1
040.06	**Hydrogen Sulfide**	**2**
	Extrinsic Allergic Alveolitis	1
	Restrictive Pulmonary Function	1
040.20	**Sulfur Oxides**	**1**
	Upper Respiratory Irritation, Chronic or NOS	1
040.24	**Irritant Gases, NOS**	**1**
	COPD	1
ACIDS, BASES, AND OXIDIZING AGENTS		**29**
050.00	**Acids, Bases, Oxidizers, NOS**	**5**
	Asthma	2
	Bronchitis, NOS (including Asthmatic Bronchitis)	1
	RADS	1
	Upper Respiratory Irritation, Chronic or NOS	1
050.05	**Calcium Oxide**	**2**
	Asthma	1
	Bronchitis, Chronic	1
050.10	**Hydrochloric Acid**	**4**
	Upper Respiratory Irritation, Chronic or NOS	3
	RADS	1
050.11	**Hydrofluoric Acid**	**1**
	Restrictive Pulmonary Function	1
050.12	**Hydrogen Peroxide**	**1**
	Restrictive Pulmonary Function	1
050.17	**Potassium Hydroxide**	**3**
	Upper Respiratory Irritation, Chronic or NOS	2
	RADS	1

050.18	**Sodium Hydroxide**	**2**
	Asthma	1
	Upper Respiratory Irritation, Chronic or NOS	1
050.24	**Sulfuric Acid**	**1**
	Upper Respiratory Irritation, Chronic or NOS	1
050.32	**Phosphorus Bromide**	**1**
	RADS	1
050.33	**Acid and Base Mixture**	**1**
	RADS	1
050.34	**Acetic Acid ****	**2**
	Asthma	1
	Upper Respiratory Irritation, Chronic or NOS	1
050.38	**Sodium Tripolyphosphate**	**1**
	RADS	1
Ammonia Compounds		
052.01	**Ammonia Gas**	**1**
	Bronchitis, NOS	1
052.02	**Ammonia Solution**	**2**
	Asthma	2
052.03	**Ammonium Salts**	**2**
	Upper Respiratory Irritation, Chronic or NOS	2
ALIPHATIC AND ALICYCLIC HYDROCARBONS		**9**
060.05	**Limonene**	**1**
	Asthma	1
060.10	**Turpentine**	**1**
	Emphysema	1
060.18	**D-Limonene**	**1**
	Asthma	1
Petroleum Derivatives		
061.01	**Petroleum Spirits**	**2**
	Asthma	1
	Upper Respiratory Irritation, Chronic or NOS	1
061.02	**Naphtha**	**1**
	Upper Respiratory Irritation, Chronic or NOS	1
061.06	**Diesel Fuel**	**1**
	Asthma	1
061.07	**Asphalt**	**2**
	Nasal Polyps	1
	Upper Respiratory Irritation, Chronic or NOS	1

GLYCOL ETHERS		**1**
090.01	**Propylene Glycol Ethers**	**1**
	Upper Respiratory Irritation, Chronic or NOS	1
EPOXY COMPOUNDS		**6**
110.02	**Epoxy Resins ***	**4**
	Asthma	3
	Upper Respiratory Irritation, Chronic or NOS	1
110.04	**Rosin ***	**1**
	Upper Respiratory Irritation, Chronic or NOS	1
110.05	**Paint, Epoxy**	**1**
	Asthma	1
ALDEHYDES AND ACETALS		**17**
120.03	**Formaldehyde***	**8**
	Asthma	5
	Upper Respiratory Irritation, Chronic or NOS	3
120.05	**Glutaraldehyde***	**9**
	Asthma	5
	Upper Respiratory Irritation, Chronic or NOS	3
	RADS	1
KETONES		**8**
130.00	**Ketones, NOS**	**1**
	Upper Respiratory Irritation, Chronic or NOS	1
130.03	**Methyl Ethyl Ketone**	**7**
	Asthma	3
	Upper Respiratory Irritation, Chronic or NOS	3
	RADS	1
ESTERS		**8**
<u>Acetates</u>		
141.03	**Ethyl Acetate**	**2**
	Upper Respiratory Irritation, Chronic or NOS	2
<u>Acrylates</u>		
142.00	**Acrylates, NOS**	**4**
	Asthma	4
142.01	**Acrylic Monomer**	**1**
	Asthma	1
142.04	**Methyl Methacrylate ***	**1**
	Asthma	1

CARBOXYLIC ACIDS AND ANHYDRIDES		**3**
Anhydrides		
151.01	**Phthalic Anhydride ***	**2**
	Upper Respiratory Irritation, Chronic or NOS	2
151.08	**Hexahydrophthalic Anhydride ***	**1**
	Asthma	1
AROMATIC HYDROCARBONS		**11**
160.00	**Aromatic Hydrocarbons, NOS**	**3**
	Asthma	2
	Upper Respiratory Irritation, Chronic or NOS	1
160.02	**Toluene**	**4**
	Asthma	2
	Upper Respiratory Irritation, Chronic or NOS	2
160.03	**Xylene**	**1**
	Upper Respiratory Irritation, Chronic or NOS	1
160.05	**Naphthalene**	**1**
	RADS	1
160.08	**Vinyl Toluene**	**1**
	Asthma	1
Polycyclic Aromatic Hydrocarbons		
161.00	**Polycyclic Aromatic Hydrocarbons, NOS**	**1**
	RADS	1
HYDROCARBONS, NOS		**86**
170.00	**Hydrocarbons, NOS**	**3**
	RADS	2
	Bronchitis, NOS (including Asthmatic Bronchitis)	1
170.01	**Cutting Oils ***	**21**
	Asthma	13
	Upper Respiratory Irritation, Chronic or NOS	4
	Extrinsic Allergic Alveolitis	2
	Emphysema	2
170.03	**Oils, NOS**	**3**
	Asthma	2
	Upper Respiratory Irritation, Chronic or NOS	1
170.06	**Waxes, NOS**	**1**
	RADS	1

Solvents, NOS

171.00	**Solvents, NOS**	**33**
	Asthma	18
	Upper Respiratory Irritation, Chronic or NOS	6
	Bronchitis, NOS (including Asthmatic Bronchitis)	3
	RADS	2
	COPD	1
	Emphysema	1
	Interstitial Pulmonary Fibrosis	1
	Restrictive Pulmonary Function	1
171.01	**Paint**	**21**
	Asthma	13
	Upper Respiratory Irritation, Chronic or NOS	7
	Chemical Pneumonitis	1
171.02	**Thinner**	**2**
	Non-Specific Respiratory Disorders	1
	Upper Respiratory Irritation, Chronic or NOS	1
171.03	**Stripper**	**1**
	Rhinitis, Chronic	1
171.07	**Lacquer**	**1**
	Upper Respiratory Irritation, Acute	1

PHENOLS AND PHENOLIC COMPOUNDS	**4**

180.03	**Hydroquinone**	**3**
	Upper Respiratory Irritation, Chronic or NOS	3
180.04	**Phenol**	**1**
	Asthma	1

HALOGENATED ALIPHATIC HYDROCARBONS (EXCEPT ORGANOCHLORINE PESTICIDES)	**12**

190.00	**Chlorinated Hydrocarbons**	**2**
	Emphysema	1
	RADS	1
190.09	**Methylene Chloride**	**1**
	Upper Respiratory Irritation, Chronic or NOS	1
190.12	**1,1,2-Trichloroethane**	**2**
	Bronchitis, NOS (including Asthmatic Bronchitis)	1
	Interstitial Pulmonary Fibrosis	1
190.13	**Trichloroethylene**	**3**
	RADS	2
	Bronchitis, NOS (including Asthmatic Bronchitis)	1

Fluorocarbons		
192.01	**Freon**	**4**
	Bronchitis, NOS (including Asthmatic Bronchitis)	2
	Asthma	1
	RADS	1
CYANIDES AND NITRILES		**1**
211.03	**Sodium Cyanide**	**1**
	Asthma	1
ISOCYANATES		**32**
Diisocyanates		
221.00	**Isocyanates, NOS ***	**24**
	Asthma	22
	RADS	1
	Upper Respiratory Irritation, Chronic or NOS	1
221.01	**Toluene Diisocyanate ***	**2**
	Asthma	2
221.02	**Methylene Diisocyanate ***	**3**
	Asthma	3
221.04	**Hexamethylene Diisocyanate ***	**3**
	Asthma	3
ALIPHATIC AND ALICYCLIC AMINES		**2**
Ethanolamines		
231.00	**Ethanoloamines, NOS**	**1**
	RADS	1
Polyamines		
232.01	**Ethylenediamine ***	**1**
	Asthma	1
AROMATIC NITRO AND AMINO COMPOUNDS (INCLUDING HETEROCYCLIC)		**1**
250.17	**Dyes, NOS**	**1**
	Bronchitis, Acute	1
ALIPHATIC (INCLUDING HETEROCYCLIC) AND MISCELLANEOUS NITROGEN COMPOUNDS		**1**
260.10	**Ethylenimine**	**1**
	Asthma	1

POLYMERS		25
270.00	**Polymers, NOS**	**3**
	Bronchitis, Acute	1
	Interstitial Pulmonary Fibrosis	1
	Upper Respiratory Irritation, Chronic or NOS	1
270.02	**Latex, Natural Rubber ***	**11**
	Asthma	7
	Upper Respiratory Irritation, Chronic or NOS	3
	Pleural Effusion	1
270.06	**Polyethylene ***	**1**
	RADS	1
270.07	**Polyurethane**	**1**
	Asthma	1
270.09	**Polyvinyl Chloride ***	**3**
	Asthma	3
270.10	**Silicone**	**1**
	Asthma	1
270.15	**Resin Systems, NOS**	**2**
	Asthma	2
270.36	**Carbopol, NOS**	**1**
	RADS	1
Rubber		
271.00	**Rubber, NOS**	**2**
	Asthma	2

ORGANOPHOSPHATE PESTICIDES/CARBAMATE PESTICIDES		1
Organophosphate Pesticides		
291.05	**Chloropyrifos ***	**1**
	RADS	1

MISC CHEMICALS AND MATERIALS, REFERENCED BY USE		173
320.01	**Air Pollutants, Indoor**	**102**
	Asthma	57
	Upper Respiratory Irritation, Chronic or NOS	33
	COPD	4
	Bronchitis, NOS (Including Asthmatic Bronchitis)	2
	RADS	2
	Vocal Cord Dysfunction	2
	Bronchiectasis	1
	Bronchitis, Acute	1

320.06	**Chemicals, NOS**	**32**
	Asthma	11
	Bronchitis, NOS	8
	Upper Respiratory Irritation, Chronic or NOS	6
	RADS	3
	Interstitial Pulmonary Fibrosis	2
	Bronchitis, Acute	1
	Bronchitis, Chronic	1
320.07	**Electroplating Chemicals, NOS**	**1**
	Upper Respiratory Irritation, Chronic or NOS	1
320.11	**Glues, NOS**	**7**
	Asthma	5
	RADS	1
	Upper Respiratory Irritation, Chronic or NOS	1
320.12	**Hair Products**	**1**
	Asthma	1
320.13	**Herbicides, NOS**	**1**
	Asthma	1
320.14	**Lubricants, NOS**	**2**
	Asthma	1
	Extrinsic Allergic Alveolitis	1
320.15	**Odors**	**2**
	Pharyngitis, NOS	1
	Upper Respiratory Irritation, Chronic or NOS	1
320.16	**Pesticides, NOS**	**2**
	RADS	2
320.17	**Photo Developing Chemicals, NOS ****	**3**
	Asthma	3
320.25	**Ninhydrin**	**2**
	Asthma	2
320.27	**Mace**	**1**
	Upper Respiratory Irritation, Chronic or NOS	1
320.34	**Fingerprinting Powder**	**1**
	Asthma	1
Pharmaceutical Compounds		
321.00	**Pharmaceuticals, NOS**	**1**
	Asthma	1
Cleaning Materials		
322.00	**Cleaning Materials, NOS**	**7**
	Asthma	3
	Upper Respiratory Irritation, Chronic or NOS	2
	Bronchitis, Acute	1
	RADS	1

322.04	**Cleaners, Household, General Purpose**	**1**
	Asthma	1
322.10	**Bleach**	**3**
	Asthma	1
	RADS	1
	Upper Respiratory Irritation, Chronic or NOS	1
322.32	**Quaternary Ammonium Compounds, NOS ****	**1**
	Upper Respiratory Irritation, Chronic or NOS	1

Waste

323.01	**Waste, Hazardous**	**1**
	Upper Respiratory Irritation, Chronic or NOS	1

Enzymes and Catalysts

324.14	**Lactase**	**1**
	Asthma	1

Unknown Cause within Defined Process

326.01	**Pickle Processing (Unknown Causal Agent)**	**1**
	Asthma	1

PYROLYSIS PRODUCTS		**55**
330.01	**Cigarette Smoke**	**2**
	Asthma	1
	Upper Respiratory Irritation, Chronic or NOS	1
330.02	**Plastic Smoke**	**1**
	Upper Respiratory Irritation, Chronic or NOS	1
330.03	**Smoke, NOS**	**46**
	Asthma	19
	COPD	8
	RADS	6
	Upper Respiratory Irritation, Chronic or NOS	4
	Emphysema	3
	Bronchitis, Acute	2
	Non-Specific Respiratory Disorders	2
	Pneumoconiosis, Mixed Dust, NOS	1
	Vocal Cord Dysfunction	1

Exhaust

331.00	**Exhaust, NOS**	**2**
	Asthma	1
	Emphysema	1
331.01	**Diesel Exhaust**	**4**
	Asthma	1
	COPD	1
	Bronchitis, NOS (including Asthmatic Bronchitis)	1
	Upper Respiratory Irritation, Chronic or NOS	1

PHYSICAL FACTORS		**2**
350.03	**Heat**	**1**
	Upper Respiratory Irritation, Chronic or NOS	1
Trauma-Related Exposures		
353.09	**Struck Against/Struck By Objects or Persons**	**1**
	Pneumonia	1
ERGONOMIC FACTORS		**2**
360.04	**Stress**	**1**
	Asthma	1
Force		
361.02	**Lifting**	**1**
	Interstitial Pulmonary Fibrosis	1
PLANT MATERIALS		**22**
370.00	**Plant Material, NOS ****	**3**
	Upper Respiratory Irritation, Chronic or NOS	2
	Asthma	1
370.02	**Cotton Dust**	**4**
	Pneumoconiosis, Organic Dust	2
	Asthma	1
	Upper Respiratory Irritation, Chronic or NOS	1
Flours		
371.00	**Flour, NOS ***	**4**
	Asthma	3
	Upper Respiratory Irritation, Chronic or NOS	1
371.04	**Wheat Flour ***	**3**
	Asthma	3
Wood Dusts		
373.00	**Wood Dust, NOS**	**8**
	Asthma	5
	Upper Respiratory Irritation, Chronic or NOS	2
	Bronchitis, Chronic	1
ANIMAL MATERIALS		**6**
380.00	**Animal Material, NOS**	**3**
	Asthma	2
	Upper Respiratory Irritation, Chronic or NOS	1
380.04	**Dander, Animal**	**1**
	Asthma	1

380.07	**Chicken ***	**1**
	Extrinsic Allergic Alveolitis	1
380.16	**Avian Material, NOS**	**1**
	Asthma	1

MICROORGANISMS		**21**
390.00	**Microorganisms, NOS**	**1**
	Upper Respiratory Irritation, Chronic or NOS	1
390.01	**Mold ****	**19**
	Upper Respiratory Irritation, Chronic or NOS	8
	Asthma	5
	Extrinsic Allergic Alveolitis	3
	RADS	3
390.02	**Mycotoxins**	**1**
	Asthma	1

Table O-8 - 142 AOEC Cases With Diagnoses Related to Occupational Solvent* Exposure, 1997-2000

161 Diagnoses Related to Occupational Solvent Exposures

DIAGNOSIS GROUP Diagnosis	# of Dx in Group Freq.	(% of Solvent Cases)
TUMORS	**2**	
Leukemia, Unspecified Cell Type	1	(0.7)
Lung Cancer	1	(0.7)
PSYCHIATRIC and NEUROLOGICAL DISORDERS	**14**	
Anxiety Disorders	1	(0.7)
Depression	2	(1.4)
Encephalopathy, Toxic	8	(5.6)
Neuropathy, Peripheral	3	(2.1)
DISORDERS OF SENSORY ORGANS	**5**	
Conjunctivitis	1	(0.7)
Eye Irritation	1	(0.7)
Meniere's Disease	1	(0.7)
Neuritis, Optic	1	(0.7)
Smell and Taste Disorders	1	(0.7)
RESPIRATORY DISORDERS	**89**	
Asthma	40	(28.2)
Bronchitis, NOS (Including Asthmatic Bronchitis)	5	(1.3)
Chronic Obstructive Pulmonary Disease	1	(0.7)
Emphysema	3	(2.1)
Interstitial Pulmonary Fibrosis	1	(0.7)
Nasal Polyps	1	(0.7)
Pneumonitis, Chemical	1	(0.7)
RADS	7	(4.9)
Restrictive Pulmonary Function	1	(0.7)
Upper Respiratory Irritation, Acute	1	(0.7)
Upper Respiratory Irritation, Chronic or NOS	27	(19.0)
Non-Specific Respiratory Disorders	1	(0.7)
GASTROINTESTINAL DISORDERS	**1**	
Gastrointestinal Disorders, NOS	1	(0.7)
SKIN DISORDERS	**4**	
Skin Infections	1	(0.7)
Dermatitis, Allergic	3	(2.1)
Dermatitis, Irritant	1	(0.7)
CHEMICAL POISONINGS/SYNDROMES	**24**	
Toxic Effect of Lead	1	(0.7)
Toxic Effect of Solvents	22	(15.5)
Toxic Effect of Gas/Fumes/Vapors/Misc. Chemicals	2	(1.4)

* Organic solvents have been tagged with a special code in the AOEC exposure coding system.

Table O-8, continued. 161 Diagnoses and Related Solvent Exposures

SYMPTOMS and ILL-DEFINED CONDITIONS	**18**	
Abnormal Blood Test Results	2	(1.4)
Dizziness	3	(2.1)
Headache, Migraine	3	(2.1)
Headache, NOS	5	(3.5)
Fatigue	3	(2.1)
Shortness of Breath	1	(0.7)
Sick Building Syndrome	1	(0.7)
MISCELLANEOUS CONDITIONS	**4**	
Angioedema	1	(0.7)
Multiple Chemical Sensitivity	3	(2.1)

Table O-9 - 21 AOEC Cases With Diagnoses Related to Occupational Pesticide* Exposure, 1996-2000

25 Diagnoses Related to Occupational Pesticide Exposures

DIAGNOSIS GROUP Diagnosis	# of Dx in Group Freq.	(% of Pesticide Cases)
INFECTIOUS DISEASES	**1**	
Lyme Disease	1	(5)
PSYCHIATRIC and NEUROLOGICAL DISORDERS	**2**	
Organic Brain Syndrome	1	(5)
Bell's Palsy	1	(5)
RESPIRATORY DISORDERS	**4**	
Asthma	1	(5)
Reactive Airway Disease	3	(14)
REPRODUCTIVE DISORDERS	**1**	
Complications of Pregnancy	1	(5)
SKIN DISORDERS	**4**	
Dermatitis, Allergic	2	(10)
Dermatitis, Irritant	1	(5)
Dermatitis, NOS	1	(5)
SYMPTOMS AND ILL-DEFINED CONDITIONS	**4**	
Fatigue	2	(10)
Abdominal Cramps	1	(5)
Symptoms, NOS	1	(5)
CHEMICAL POISONINGS/SYNDROMES	**7**	
Toxic Effect of Pesticides	7	(33)
MISCELLANEOUS CONDITIONS	**2**	
Multiple Chemical Sensitivity	2	(10)

* Pesticides have been tagged with a special code in the AOEC exposure coding system.

AOEC DATABASE, 1997 - 2000

"ASBESTOS" TABLES AND FIGURES

Cases Related to Occupational and Environmental Asbestos Exposures (N=2,057)

Table A-1 - AOEC Cases Related to Asbestos Exposures (N=2,057)

Demographic Characteristics

	1997	1998	1999	2000	**Total** Subtotal	**(%)** (%)
Cases from Participating Clinics	**367**	**722**	**405**	**569**	**2057**	**(100.0)**
Cambridge, Massachusetts	0	0	0	1	1	**(0.1)**
Cook County Hospital, Illinois	5	1	1	0	7	**(0.3)**
Emory University, Georgia	1	1	1	0	3	**(0.1)**
George Washington University, DC	8	0	0	0	8	**(0.4)**
Massachusetts Respiratory Hospital	23	25	24	11	83	**(4.0)**
Michigan State University	9	13	2	3	27	**(1.3)**
Robert Wood Johnson, NJ	9	10	5	0	24	**(1.2)**
Saint Lawrence Hospital, MI	312	665	367	550	1894	**(92.1)**
Toxicology Associates, CO	0	3	4	3	10	**(0.5)**
Age						
< 20	0	1	0	0	1	**(0.1)**
20 - 29	0	0	1	1	2	**(0.1)**
30 - 39	0	5	4	0	9	**(0.4)**
40 - 49	55	100	28	37	220	**(10.7)**
50 - 59	114	265	105	202	686	**(33.3)**
> 59	198	347	266	328	1139	**(55.4)**
Gender						
Male	361	706	391	562	2020	**(98.2)**
Female	6	12	13	6	37	**(1.8)**
Union Member (Occupational Cases Only, N= 2,055)						
Yes	38	32	12	7	89	**(4.3)**
No	11	13	17	3	44	**(2.1)**
Unknown	317	672	375	558	1922	**(93.5)**

Figure A-1 - Ethnicity
AOEC Cases Related to Asbestos Exposures
1997-2000 (N= 2,057)

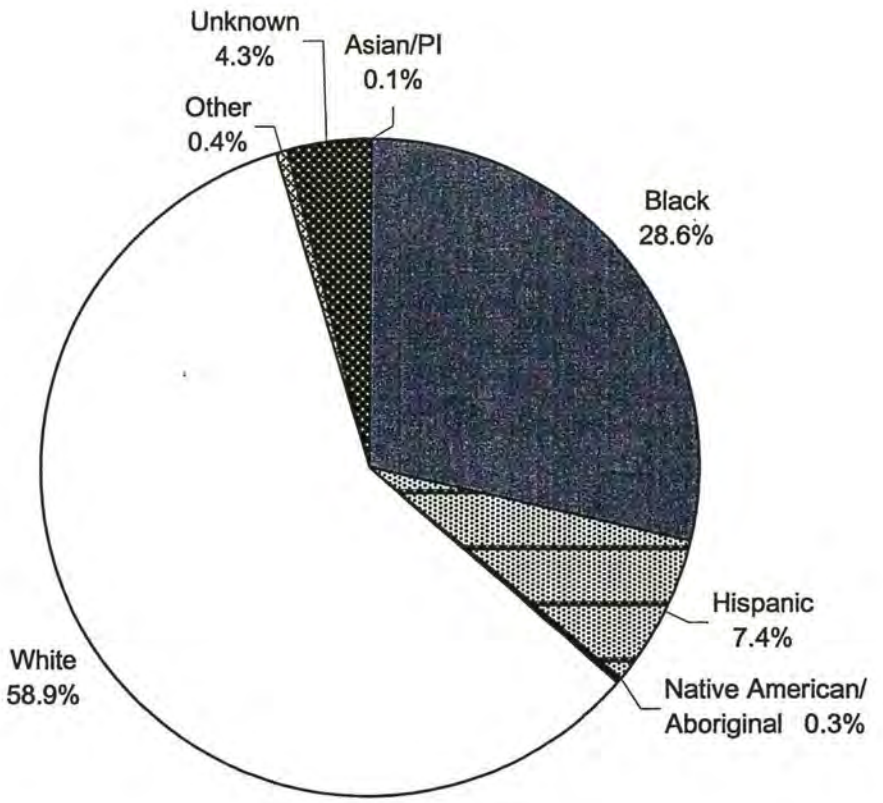

Figure A-2 - Referral Source
AOEC Cases Related to Asbestos Exposure,
1997-2000 (N= 2,057)

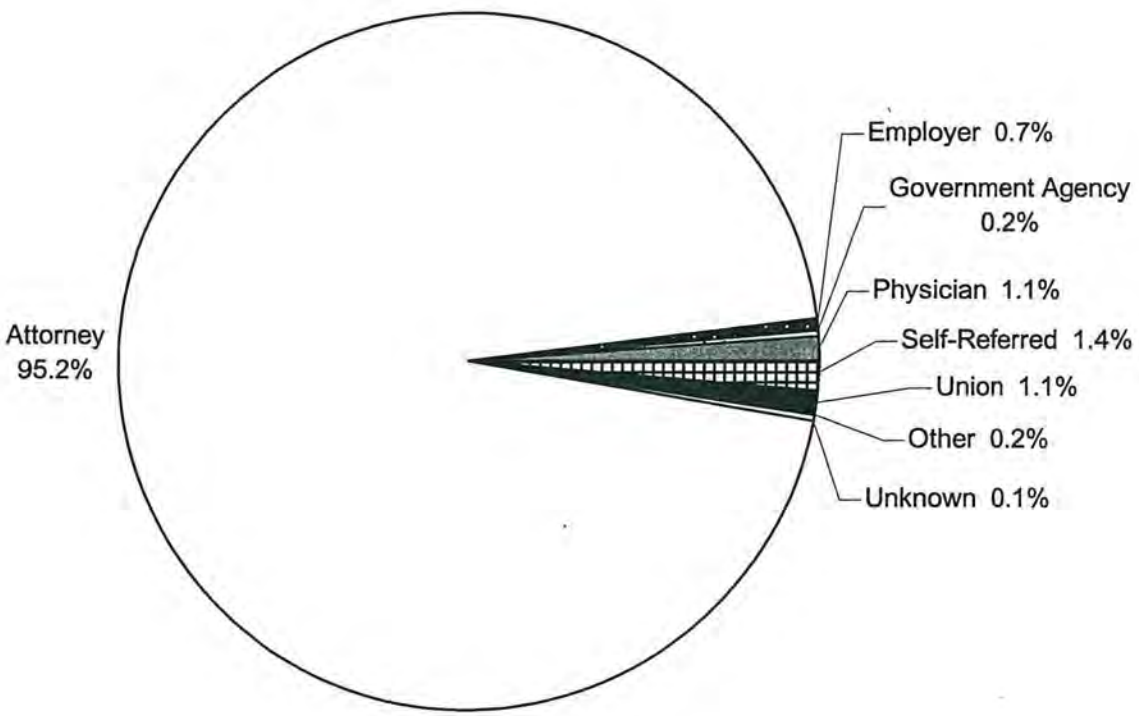

Figure A-3 - Job Status
AOEC Cases Related to Asbestos Exposures, 1997-2000 (N= 2,055)*
*** Occupational Cases Only**

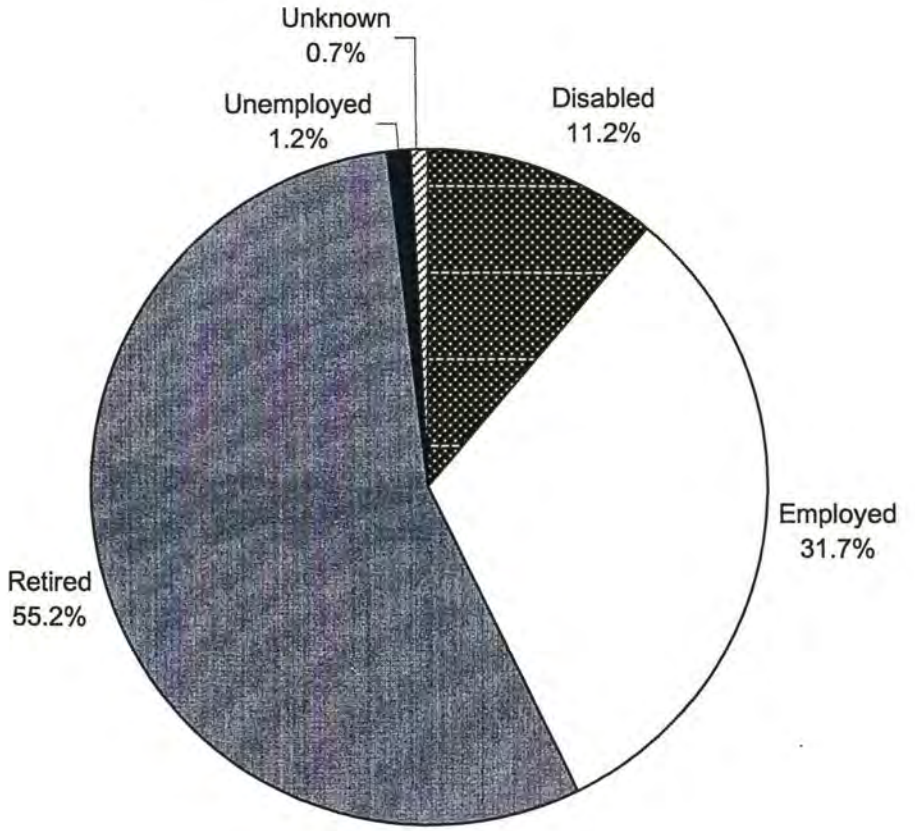

Table A-2 - AOEC Cases Related to Occupational Asbestos Exposures (N= 2,055)

Current or Most Relevant Industry

SIC CODE	INDUSTRY	1997	1998	1999	2000	TOTAL	(%)*
01-09	**Agriculture, Forestry, and Fishing**	**0**	**1**	**0**	**1**	**2**	**(0.1)**
	Agricultural Production					1	
	Agricultural Services					1	
15-17	**Construction**	**84**	**62**	**83**	**111**	**340**	**(16.5)**
	Construction - Special Trade Contractors					271	
	Building Construction					61	
	Heavy Construction, other than building construction					8	
20-39	**Manufacturing**	**248**	**612**	**293**	**351**	**1504**	**(73.2)**
	Primary Metal Industries					1123	
	Fabricated Metal Products exc Machinery & Transport					181	
	Transportation Equipment					151	
	Paper & Allied Products					11	
	Chemicals and Allied Products					9	
	Miscellaneous Manufacturing Industries					6	
	Petroleum Refining and Related Industries					6	
	Industrial & Commercial Machinery & Comput Equip					6	
	Stone, Clay, Glass and Concrete Products					3	
	Electronic & Other Electrical Equip except Computers					2	
	Printing, Publishing, & Allied Industries					2	
	Food and Kindred Products					1	
	Textile Mill Products					1	
	Lumber and Wood Products except Furniture					1	
	Furniture and Fixtures					1	
40-49	**Transport, Communic, Elec,Gas, & Sanitary Svcs**	**27**	**31**	**14**	**87**	**159**	**(7.7)**
	Railroad Transportation					142	
	Electric, Gas and Sanitary Services					10	
	Water Transportation					2	
	Motor Freight Transportation and Warehousing					2	
	United States Postal Service					2	
	Local and Suburban Transit & Interurban Highway					1	
52-59	**Retail Trade**	**1**	**2**	**0**	**3**	**6**	**(0.3)**
	Miscellaneous Retail					2	
	Food Stores					2	
	General Merchandise Stores					1	
	Auto Dealers & Gasoline Service Stations					1	
60-67	**Finance, Insurance and Real Estate**	**0**	**1**	**0**	**1**	**2**	**(0.1)**
	Real Estate					1	
	Depository Institutions					1	

Table A-2, continued. Current or Most Relevant Industry

SIC CODE	INDUSTRY	1997	1998	1999	2000	TOTAL	(%)*
70-89	**Services**	**5**	**6**	**8**	**8**	**27**	**(1.3)**
	Educational Services					10	
	Health Services					4	
	Business Services					3	
	Automotive Repair, Services, and Parking					3	
	Engineering, Accounting, Research, Mgmt., and Related Svcs.					2	
	Miscellaneous Services					2	
	Miscellaneous Repair Services					1	
	Amusement and Recreation Services					1	
	Private Households					1	
91-97	**Public Administration**	**1**	**1**	**1**	**2**	**5**	**(0.2)**
	National Security and International Affairs					3	
	Justice, Public Order and Safety					2	
	Missing or Unclassifiable	**0**	**1**	**5**	**4**	**10**	**(0.5)**
	Total	**366**	**717**	**404**	**568**	**2055**	

Table A-3 - AOEC Cases Related to Occupational Asbestos Exposures (N= 2,055)

Current or Most Relevant Occupation

SOC CODE	OCCUPATION	1997	1998	1999	2000	Total	(%)*
11, 13-14	**Executive, Administrative, & Managerial**	**1**	**3**	**1**	**0**	**5**	**(0.2)**
16	**Engineers**	**2**	**0**	**0**	**2**	**4**	**(0.2)**
17-18	**Natural Scientists & Mathematicians**	**0**	**0**	**0**	**1**	**1**	**(0.1)**
22-25	**Teachers, Librarians & Counselors**	**0**	**0**	**0**	**0**	**0**	**(0.0)**
37, 39	**Technologists & Technicians, Exc. Health**	**0**	**0**	**1**	**0**	**1**	**(0.1)**
42-47	**Marketing & Sales Occupations**	**1**	**1**	**1**	**6**	**9**	**(0.4)**
46	**Administrative Support Occupations**	**0**	**1**	**0**	**1**	**2**	**(0.1)**
51-52	**Service Occupations**	**6**	**8**	**5**	**7**	**26**	**(1.3)**
	Cleaning and Building Service Occupations					13	
	Fireman					6	
	Other Service Occupations					7	
55-58	**Agriculture, Forestry & Fishing Occs**	**0**	**1**	**0**	**0**	**1**	**(0.1)**
61	**Mechanics and Repairers**	**27**	**56**	**12**	**53**	**148**	**(7.2)**
	Millwrights					83	
	General Maintenance					20	
	Electrical Repairmen					12	
	Vehicle & Mobile Equipment Mechanics					9	
	Other Mechanics & Repairers					24	
63-64	**Construction & Extractive Occupations**	**89**	**92**	**93**	**122**	**396**	**(19.3)**
	Plumbers, Pipefitters and Steamfitters					125	
	Brickmasons					81	
	Electricians					76	
	Carpenters					36	
	Concrete, Plasterers, and Terrazzo Finishers					48	
	Insulation Workers					15	
	Painters					5	
	Other Construction Trades					10	
67-69	**Precision Production Occupations**	**10**	**28**	**23**	**35**	**96**	**(4.7)**
	Boilermakers					17	
	Sheet Metal Workers					15	
	Machine Operators					15	
	Machinists					13	
	Tool and Die Maker					11	
	Other Precision Production Occupations					25	

Table A-3, continued. Current or Most Relevant Occupation

SOC CODE	OCCUPATION	1997	1998	1999	2000	Total	(%)*
71, 73-78	**Production Working Occupation**	**156**	**83**	**20**	**69**	**328**	**(16.0)**
	Assemblers, Moulders, Pourers, Grinders					83	
	Core Room Workers					64	
	Welders and Cutters					61	
	Laborers					36	
	Machine Operators and Tenders					35	
	Supervisors, Production Occupations					18	
	Production Inspectors, Testers, Weighers					3	
	Other Production Occupations					28	
81-83	**Transportation/Material Moving Occs**	**18**	**24**	**7**	**62**	**111**	**(5.4)**
	Rail Transportation Occupations					55	
	Laborers					20	
	Motor Vehicle Operators					14	
	Operating Engineers					10	
	Crane and Tower Operators					6	
	Other Transportation & Material Moving Occs					6	
86-87	**Handlers, Cleaners, Helpers, & Laborers**	**56**	**420**	**236**	**209**	**921**	**(44.8)**
	Laborers					894	
	Cleaners					6	
	Other Manual Occupations					21	
99	**Miscellaneous/Missing Occupations**	**0**	**0**	**5**	**1**	**6**	**(0.3)**
	Totals	**366**	**717**	**404**	**568**	**2055**	

* Percents do not total to 100 due to rounding.

Table A-4 - Asbestos-Related AOEC Cases Among Union Members, 1997-2000 (N= 89)

Union Membership

Union Name	Total	(%)
United **Automobile**, Aerospace & Agricultural Implement Workers of America	18	(20.2)
Int'l Brotherhood of **Boilermakers**, Iron Ship Builders, Blacksmiths, Forgers and Helpers	3	(3.4)
Int'l Union of **Bricklayers** and Allied Craftsmen	4	(4.5)
United Brotherhood of **Carpenters** & Joiners of America	2	(2.2)
Communication Workers of America	1	(1.1)
Int'l Brotherhood of **Electrical Workers**	5	(5.6)
Brotherhood of Locomotive **Engineers**	1	(1.1)
Int'l Association of Heat & Frost **Insulators and Asbestos Workers**	3	(3.4)
Association of **Journeymen** and Pipefitting Industries	2	(2.2)
National **Marine** Engineers Beneficial Association	1	(1.1)
Int'l Union of **Operating Engineers**	2	(2.2)
Operative Plasterers' and Cement Masons Int'l Association	2	(2.2)
United Assoc of Journeyman & Apprentices of the **Plumbing and Pipefitting** Industry	2	(2.2)
United **Rubber**, Cork, Linoleum, and Plastic Workers of America	1	(1.1)
Service Employees Int'l Union	1	(1.1)
Sheet Metal Workers' Int'l Association	1	(1.1)
United **Steel Workers** of America	3	(3.4)
Utility Workers' Union of America	1	(1.1)
Unknown	36	(40.4)
Total	*89*	

* Totals do not sum to 100 because of rounding.

Table A-5 – 2,072 Diagnoses Related to Asbestos Exposure, 1997-2000 (N= 2,057 Cases)

2,072 Asbestos Related Diagnoses

DIAGNOSIS GROUP	# of Dx in Group	
Diagnosis	Freq.	(% of Cases)
TUMORS	**12**	
Lung Cancer	7	(0.3)
Mesothelioma	3	(0.1)
Colon Cancer	1	(0.0)
Laryngeal Cancer	1	(0.0)
RESPIRATORY DISORDERS	**2,059**	
Asbestosis/Parenchymal Disease	1,955	(95.0)
Pleural Disease*	77	(3.7)
Chronic Obstructive Pulmonary Disease (COPD)	10	(0.5)
Asthma	4	(0.2)
Emphysema	4	(0.2)
Dyspnea	2	(0.1)
Idiopathic Interstitial Pulmonary Fibrosis	2	(0.1)
Chronic Cough	1	(0.0)
Chronic Bronchitis (Incl. Asthmatic Bronchitis)	1	(0.0)
Chronic Upper Respiratory Irritation	1	(0.0)
Mixed Dust Fibrosis/Pneumoconiosis	1	(0.0)
Restrictive Lung Function*	1	(0.0)
OTHER	**1**	
Depression	1	(0.0)

* Pleural disease and restrictive lung function were counted as diagnoses only in the absence of asbestosis/parenchymal disease.

AOEC DATABASE, 1997 - 2000

"ENVIRONMENTAL" TABLES AND FIGURES

Cases Related to Environmental Exposures Other than Asbestos (N=215)

Table E-1 - AOEC Cases Related to Environmental Exposures (N= 215)

Demographic Characteristics

	1997	1998	1999	2000	**Total** Subtotal	**(%)** (%)
Cases from Participating Clinics	**62**	**52**	**57**	**44**	**215**	**(100.0)**
Alberta, Canada	0	1	0	0	**1**	**(0.5)**
Cambridge, Massachusetts	0	1	2	9	**12**	**(5.6)**
Cook County Hospital, Illinois	7	2	9	6	**24**	**(11.2)**
Emory University, Georgia	12	11	0	1	**24**	**(11.2)**
George Washington University, DC	1	4	3	2	**10**	**(4.7)**
Massachusetts Respiratory Hospital	13	11	24	21	**69**	**(32.1)**
Michigan State University	0	0	1	1	**2**	**(0.9)**
Robert Wood Johnson, NJ	29	17	14	3	**63**	**(29.3)**
Toxicology Associates, CO	0	5	4	0	**9**	**(4.2)**
University of New Mexico	0	0	0	1	**1**	**(0.5)**
Age						
< 20	6	4	3	3	**16**	**(7.4)**
20 - 29	6	3	3	3	**15**	**(7.0)**
30 - 39	12	13	12	7	**44**	**(20.5)**
40 - 49	22	15	19	11	**67**	**(31.2)**
50 - 59	14	11	13	14	**52**	**(24.2)**
>59	2	6	7	6	**21**	**(9.8)**
Gender						
Male	19	21	23	18	**81**	**(37.7)**
Female	43	31	34	26	**134**	**(62.3)**

Figure E-1 - Ethnicity
AOEC Cases Related to Environmental Exposures
1997-2000 (N= 215)

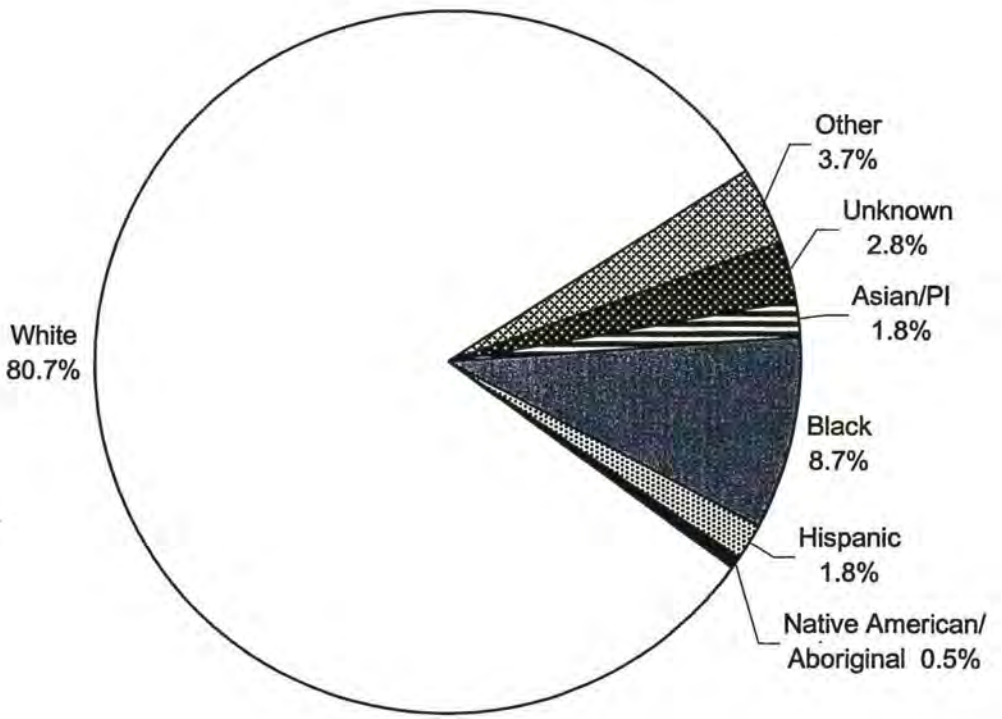

Figure E-2 - Referral Source
AOEC Cases Related to Environmental Exposure,
1997-2000 (N= 215)

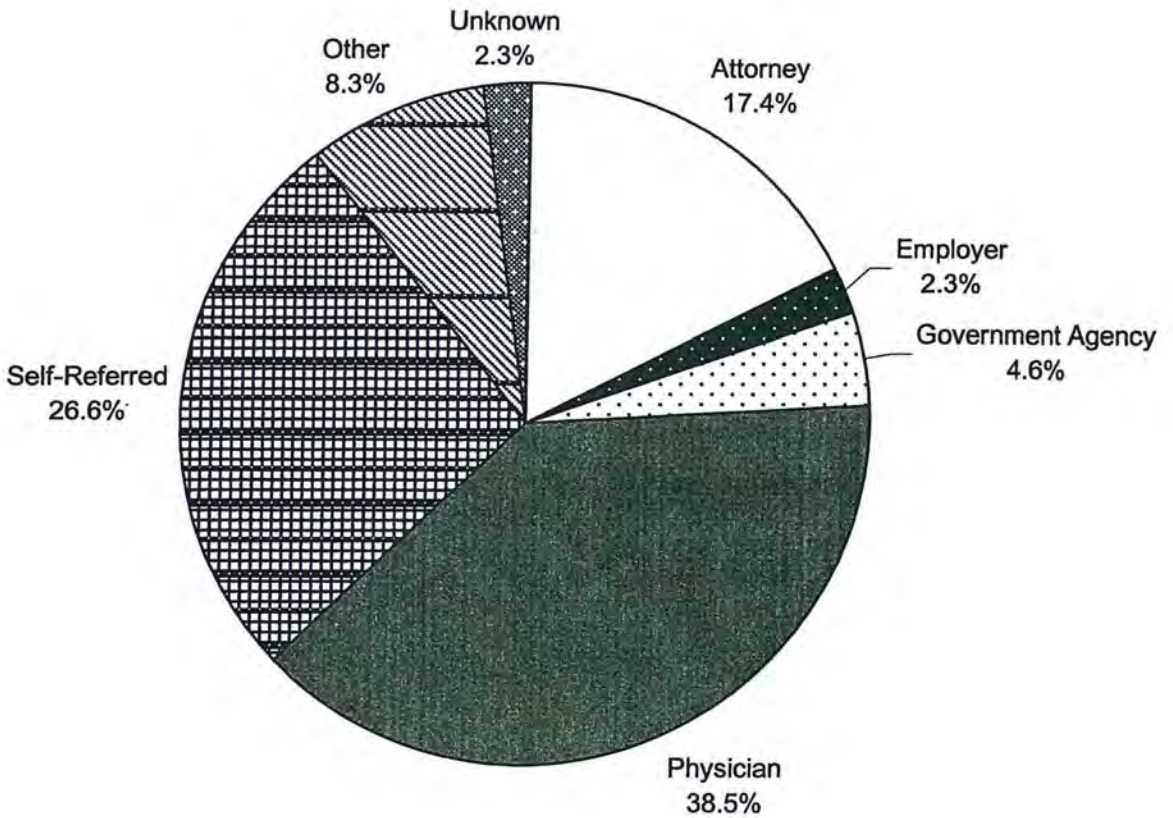

Table E-2 - AOEC Cases Related to Environmental Exposures, 1997-2000 (N= 215 cases, 253 Hazards)

Environmental Hazards

HAZ CODE	HAZARD	FREQ	(%) of HAZARDS
010	**MINERAL AND INORGANIC DUST**	**12**	**(4.7)**
010.00	Dust, NOS	8	(3.2)
010.09	Man-Made Mineral Fibers	3	(1.2)
010.13	Silica, Crystalline	1	(0.4)
020	**METALS AND METALLOIDS**	**28**	**(11.1)**
020.05	Arsenic	3	(1.2)
020.21	Lead, Inorganic	8	(3.2)
020.25	Mercury, Inorganic	12	(4.7)
020.26	Mercury, Organic	4	(1.6)
020.32	Silver	1	(0.4)
030	**HALOGENS (INORGANIC)**	**1**	**(0.4)**
030.02	Chlorine	1	(0.4)
040	**MISCELLANEOUS INORGANIC COMPOUNDS**	**14**	**(5.5)**
040.04	Carbon Monoxide	12	(4.7)
040.06	Hydrogen Sulfide	1	(0.4)
040.24	Irritant Gases, NOS	1	(0.4)
050	**ACIDS, BASES AND OXIDIZING AGENTS**	**5**	**(1.8)**
050.09	Hydrobromic Acid	1	(0.4)
050.24	Sulfuric Acid	2	(0.8)
050.44	Hydrofluosilicic Acid	1	(0.4)
052	Ammonia Compounds		
052.01	Ammonia Gas	1	(0.4)
060	**ALIPHATIC AND ALICYCLIC HYDROCARBONS**	**11**	**(4.3)**
060.11	4-PC	5	(1.8)
061	Petroleum Derivatives		
061.01	Petroleum Spirits	2	(0.8)
061.06	Diesel Fuel	4	(1.6)
080	**GLYCOLS**	**1**	**(0.4)**
080.01	Ethylene Glycol	1	(0.4)

Table E-2, continued. Environmental Hazards

100	**ETHERS**	**2**	**(0.8)**
100.08	Methyl Tertiary Butyl Ether	2	(0.8)
120	**ALDEHYDES AND ACETALS**	**9**	**(3.6)**
120.03	Formaldehyde	9	(3.6)
140	**ESTERS**	**1**	**(0.4)**
141	Acetates		
141.04	Vinyl Acetate	1	(0.4)
160	**AROMATIC HYDROCARBONS**	**5**	**(1.8)**
160.00	Aromatic Hydrocarbons, NOS	1	(0.4)
160.01	Benzene	3	(1.2)
161	Polycyclic Aromatic Hydrocarbons		
161.00	Polycyclic Aromatic Hydrocarbons, NOS	1	(0.4)
170	**HYDROCARBONS, NOS**	**22**	**(8.7)**
170.00	Hydrocarbons, NOS	2	(0.8)
171	Solvents, NOS		
171.00	Solvents, NOS	16	(6.3)
171.01	Paint	3	(1.2)
171.07	Lacquer	1	(0.4)
180	**PHENOLS AND PHENOLIC COMPOUNDS**	**2**	**(0.8)**
180.01	Creosote	1	(0.4)
180.04	Phenol	1	(0.4)
190	**HALOGENATED ALIPHATIC HYDROCARBONS (EXCEPT ORGANOCHLORINE PESTICIDES)**	**5**	**(1.8)**
190.03	Chloroform	1	(0.4)
190.10	Perchlorethylene	1	(0.4)
190.13	Trichloroethylene	2	(0.8)
192	Fluorocarbons		
192.01	Freon	1	(0.4)
220	**ISOCYANATES**	**1**	**(0.4)**
221	Diisocyanates		
221.00	Isocyanates, NOS	1	(0.4)

Table E-2, continued. Environmental Hazards

270	**POLYMERS**	**4**	**(1.6)**
270.01	Acrylics	1	(0.4)
270.05	Polyester Resin	1	(0.4)
270.07	Polyurethane	2	(0.8)
280	**ORGANOCHLORINE PESTICIDES**	**1**	**(0.4)**
280.00	Organochlorine Pesticides, NOS	1	(0.4)
290	**ORGANOPHOSPHATE PESTICIDES/ CARBAMATE PESTICIDES**	**8**	**(3.2)**
291	Organophosphate Pesticides		
291.01	Malathion	1	(0.4)
291.05	Chlorpyrifos	6	(2.4)
291.12	Ethephon	1	(0.4)
320	**MISCELLANEOUS CHEMICALS AND MATERIALS, REFERENCED BY USE**	**56**	**(22.1)**
320.01	Air Pollutants, Indoor	12	(4.7)
320.06	Chemicals, NOS	10	(4.0)
320.08	Fungicide, NOS	1	(0.4)
320.10	Fire Extinguisher Discharge	1	(0.4)
320.13	Herbicides, NOS	1	(0.4)
320.15	Odors	9	(3.6)
320.16	Pesticides, NOS	7	(2.8)
320.18	Pyrethrins	1	(0.4)
320.20	Theatrical Fog, NOS	1	(0.4)
320.23	Perfume, NOS	4	(1.6)
322	Cleaning Materials		
322.00	Cleaning Materials, NOS	2	(0.8)
322.04	Cleaners, Household, General Purpose	1	(0.4)
322.10	Bleach	1	(0.4)
322.18	Cleaners, Detergent, NOS	1	(0.4)
322.25	Cleaners, Oven	1	(0.4)
327	Water Contamination		
327.00	Water Contamination, NOS	1	(0.4)
327.02	Water Contamination, Inorganic	2	(0.8)
330	**PYROLYSIS PRODUCTS**	**25**	**(9.9)**
330.01	Cigarette Smoke	11	(4.3)
330.03	Smoke, NOS	8	(3.2)
330.05	Marijuana Smoke	1	(0.4)
330.06	Smoke, Lead-Containing	1	(0.4)
331	Exhaust		
331.01	Diesel Exhaust	1	(0.4)
331.02	Engine Exhaust	3	(1.3)

Table E-2, continued. Environmental Hazards

350	**PHYSICAL FACTORS**	**5**	**(1.8)**
350.03	Heat	2	(0.8)
353	Trauma-Related Exposures		
353.00	Trauma, Acute, NOS	1	(0.4)
353.05	Motor Vehicle Accident	2	(0.8)
360	**ERGONOMIC FACTORS**	**8**	**(3.2)**
360.00	Ergonomic Factors, NOS	1	(0.4)
360.02	Keyboard Use	1	(0.4)
360.03	Repetitive Motion	2	(0.8)
360.04	Stress	1	(0.4)
361	Force		
361.02	Lifting	2	(0.8)
362	Posture		
362.02	Posture, Body- Static	1	(0.4)
370	**PLANT MATERIAL**	**5**	**(1.8)**
370.00	Plant Material, NOS	1	(0.4)
370.10	Pollen	2	(0.8)
373	Wood Dusts		
373.00	Wood Dust, NOS	2	(0.8)
380	**ANIMAL MATERIALS**	**6**	**(2.4)**
380.00	Animal Material, NOS	1	(0.4)
380.04	Dander, Animal	2	(0.8)
380.08	Pig	1	(0.4)
382	Insect Materials		
382.13	Mites, NOS	1	(0.4)
382.21	Insect Bite, NOS	1	(0.4)
390	**MICROORGANISMS**	**16**	**(6.3)**
390.00	Microorganisms, NOS	1	(0.4)
390.01	Mold	14	(5.5)
390.09	Hepatitis B	1	(0.4)
	TOTAL	**253**	**(100.0)**

Table E-3 - Diagnoses and Exposures of 215 Cases Related to Environmental Exposures (Non-Asbestos), 1997-2000

236 Diagnoses and Related Environmental Exposures

DIAGNOSIS GROUP	# of Cases in Group w/ Dx	
DIAGNOSIS (DX) Hazard	**# of Cases w/ Dx*** Hazard Freq	**(% of Cases)**
INFECTIOUS DISEASE	**1**	
Hepatitis B	**1**	**(0.5)**
Hepatitis B	1	
TUMORS	**1**	
Acute Leukemia, Monocytic	**1**	**(0.5)**
Benzene	1	
PSYCHIATRIC and NEUROLOGICAL DISORDERS	**15**	
Anxiety Disorders	**5**	**(2.3)**
Benzene	2	
Methyl Tertiary Butyl Ether	2	
Solvents, NOS	2	
Marijuana Smoke	1	
Encephalopathy, Toxic	**3**	**(1.4)**
Solvents, NOS	2	
Smoke, NOS	1	
Neuropathy, Toxic	**3**	**(1.4)**
Arsenic	1	
Smoke, Lead-Containing	1	
Man-Made Mineral Fibers	1	
Organic Brain Syndrome/Cognitive Disorder	**1**	**(0.5)**
Arsenic	1	
Post-Traumatic Stress Disorder, Chronic	**2**	**(0.9)**
Fire Extinguisher Discharge	1	
Motor Vehicle Accident	1	
Post-Traumatic Headache/Post-Concussion Syndrome	**1**	**(0.5)**
Carbon Monoxide	1	

DISORDERS OF SENSORY ORGANS*	**4**	
Conjunctivitis	**1**	**(0.5)**
Hydrofluosilicic Acid	1	
Optic Neuritis	**1**	**(0.5)**
Lacquer	1	
Smell/Taste Disorders	**2**	**(0.9)**
Chemicals, NOS	1	
Odors	1	
RESPIRATORY DISORDERS	**64**	
Asthma	**24**	**(11.2)**
Mold, NOS	4	
Formaldehyde	3	
Solvents, NOS	3	
Air Pollutants, Indoor	2	
Chemicals, NOS	2	
Cigarette Smoke	2	
Dust, NOS	2	
Chlorine	1	
Fungicide, NOS	1	
Hydrobromic Acid	1	
Hydrocarbons, NOS	1	
Paint	1	
Polyurethane	1	
Pyrethins	1	
Smoke, NOS	1	
Theatrical Fog, NOS	1	
Wood Dust, NOS	1	
Bronchitis, Chronic or NOS	**1**	**(0.5)**
Mold, NOS	1	
Chronic Obstructive Pulmonary Disease	**6**	**(2.8)**
Cigarette Smoke	4	
Air Pollutants, Indoor	1	
Smoke, NOS	1	
Emphysema	**1**	**(0.5)**
Cigarette Smoke	1	
Hypersensitivity Reaction, Upper Respiratory, NOS	**1**	**(0.5)**
Hydrocarbons, NOS	1	

* *Many cases of eye irritation have been reported in combination with upper respiratory irritation. These cases are included with the respiratory diagnoses, and are not included here.*

Reactive Airways Disease (RADS)	**4**	**(1.9)**
Diesel Fuel	1	
Solvents, NOS	1	
Chemicals, NOS	1	
Smoke, NOS	1	
Upper Respiratory Irritation, Chronic or NOS (Sinusitis/rhinitis/pharyngitis/laryngitis)	**27**	**(12.6)**
Mold, NOS	4	
Dander, Animal	2	
Dust, NOS	2	
Man-Made Mineral Fibers	2	
Sulfuric Acid	2	
Acrylics	1	
Air Pollutants, Indoor	1	
Aromatic Hydrocarbons, NOS	1	
Bleach	1	
Chemicals, NOS	1	
Diesel Fuel	1	
Exhaust, NOS	1	
Hydrocarbons, NOS	1	
Irritant Gasses, NOS	1	
Microorganisms, NOS	1	
Mites, NOS	1	
Odors	1	
Perchlorethylene	1	
Petroleum Spirits	1	
Phenols, NOS	1	
Plant Material, NOS	1	
Pollen	1	
Polycyclic Aromatic Hydrocarbons, NOS	1	
Smoke, NOS	1	
GASTROINTESTINAL DISORDERS	**1**	
Abdominal Pain, NOS	**1**	**(0.5)**
Herbicides, NOS	1	
LIVER DISORDERS	**2**	
Hepatitis, Chemical	**2**	**(0.9)**
Fungicide, NOS	1	
Hydrocarbons, NOS	1	
Solvents, NOS	1	

SKIN DISORDERS	**7**	
Contact Dermatitis, Allergic	**4**	**(1.7)**
Chemicals, NOS	1	
Coal Tar	1	
Creosote	1	
Dursban	1	
Formaldehyde	1	
Urticaria	**3**	**(1.4)**
Formaldehyde	1	
4-PC	1	
Polyester Resin	1	
Vinyl Acetate	1	
ACUTE and CHRONIC MUSCULOSKELETAL DISORDERS	**14**	
NECK and BACK PROBLEMS (4)		
Herniated Disc, Cervical	**2**	**(0.9)**
Motor Vehicle Accident	1	
Posture, Body- Static	1	
Strain/Sprain/Tear, Neck	**1**	**(0.5)**
Ergonomic Factors, NOS	1	
Pain, Low Back	**1**	**(0.5)**
Posture, Body- Static	1	
Herniated Disc, NOS	**1**	**(0.5)**
Heavy Lifting	1	
UPPER EXTREMITY PROBLEMS - ARM/HAND/WRIST (8)		
Carpal Tunnel Syndrome	**1**	**(0.5)**
Repetitive Motion	1	
Epicondylitis	**2**	**(0.9)**
Heavy Lifting	1	
Posture, Body- Static	1	
Unspecified Cumulative Trauma Disorders or Musculoskeletal Pain, Upper Extremity	**4**	**(1.9)**
Dursban	1	
Keyboard Use	1	
Motor Vehicle Accident	1	
Repetitive Motion	1	
OTHER MUSCULOSKELETAL PROBLEMS (2)		
Arthritis, Rheumatoid	**1**	**(0.5)**
Smoke, NOS	1	
Other Unspecified Musculoskeletal Disorder	**1**	**(0.5)**
Smoke, NOS	1	

SYMPTOMS AND ILL-DEFINED CONDITIONS	42	
Cough, Chronic or NOS	**2**	**(0.9)**
Cigarette Smoke	1	
Ethephon	1	
Dizziness	**1**	**(0.5)**
Ethylene Glycol	1	
Phenol	1	
Dyspnea	**4**	**(1.9)**
Air Pollutants, Indoor	2	
Cigarette Smoke	2	
Mold, NOS	1	
Fatigue	**10**	**(4.7)**
Diesel Fuel	2	
4-PC	1	
Cleaners, Household, General Purpose	1	
Dust, NOS	1	
Formaldehyde	1	
Isocyanates, NOS	1	
Organochlorine Pesticides, NOS	1	
Perfume, NOS	1	
Pesticides, NOS	1	
Solvents, NOS	1	
Water Contamination, NOS	1	
Headache, Migrane	**5**	**(2.3)**
Dursban	1	
Mold, NOS	1	
Odors	1	
Smoke, NOS	1	
Solvents, NOS	1	
Trichloroethylene	1	
Headache, Chemical or NOS	**8**	**(3.7)**
Carbon Monoxide	2	
Dust, NOS	1	
Diesel Fuel	1	
Petroleum Spirits	1	
Formaldehyde	1	
Pesticides, NOS	1	
Perfume, NOS	1	
Nausea/Vomiting	**1**	**(0.5)**
Chicken	1	
Syncope	**1**	**(0.5)**
Ethylene Glycol	1	
Phenol	1	

Sick Building Syndrome and Other General Symptoms	**8**	**(3.7)**
Air Pollutants, Indoor	4	
Carbon Monoxide	1	
Cleaners, Detergent, NOS	1	
Dust, NOS	1	
Mold, NOS	1	
Solvents, NOS	1	
Wood Dust, NOS	1	
Skin Symptoms, NOS	**1**	**(0.5)**
Dursban	1	
Voice Disturbance	**1**	**(0.5)**
Heat	1	
CHEMICAL POISONINGS/SYNDROMES	**48**	
Toxic Effect of Carbon Monoxide	**10**	**(4.7)**
Carbon Monoxide	8	
Diesel Exhaust	2	
Cigarette Smoke	1	
Toxic Effect Gas/Fumes Vapors	**1**	**(0.5)**
Hydrogen Sulfide	1	
Toxic Effect of Lead	**9**	**(4.2)**
Lead, Inorganic	8	
Smoke, Lead-Containing	1	
Toxic Effect of Other Metals	**14**	**(6.5)**
Mercury, Inorganic	8	
Mercury, Organic	4	
Arsenic	1	
Silver	1	
Toxic Effect of Pesticides	**7**	**(3.3)**
Pesticides, NOS	3	
Chlorpyrifos	2	
Animal Material, NOS	1	
Malathion	1	
Toxic Effect of Solvents	**2**	**(0.9)**
Chloroform	1	
Freon	1	
Polyurethane	1	
Trichloroethylene	1	
Toxic Effect of Venom	**1**	**(0.5)**
Insect Bite, NOS	1	

Toxic Effect of Miscellaneous Chemicals	**4**	**(1.9)**
Odors	2	
Diesel Fuel	1	
Mold, NOS	1	

TRAUMATIC INJURY, NOT INCL. MUSCULOSKELETAL/EYE	**2**	
Burn, Arm	**1**	**(0.5)**
Steam	1	
Unspecified Injury	**1**	**(0.5)**
Trauma, Acute, NOS	1	

MISCELLANEOUS CONDITIONS	**35**	
Multiple Chemical Sensitivity and Acquired Chemical Intolerance	**33**	**(15.3)**
Chemicals, NOS	5	
Solvents, NOS	5	
4-PC	4	
Odors	4	
Cigarette Smoke	3	
Dust, NOS	3	
Perfume, NOS	3	
Air Pollutants, Indoor	2	
Cleaning Materials, NOS	2	
Formaldehyde	2	
Paint	2	
Pesticides, NOS	2	
Smoke, NOS	2	
Ammonia Gas	1	
Cleaners, Household, General Purpose	1	
Cleaners, Oven	1	
Engine Exhaust	1	
Mold, NOS	1	
Pollen	1	
Silica, Crystalline	1	
Stress	1	
Tooth Disorders	**2**	**(0.9)**
Water Contamination, Inorganic	2	

Table E-4 - 32 AOEC Cases with Diagnoses Related to Environmental Solvent* Exposure, 1997-2000

35 Diagnoses Related to Environmental Solvent Exposures

DIAGNOSIS GROUP Diagnosis	# of Dx in Group Freq.	(% of Solvent Cases)
TUMORS	**1**	
Leukemia, Monocytic	1	(3.1)
DISORDERS OF SENSORY ORGANS	**1**	
Optic Neuritis	1	(3.1)
PSYCHIATRIC and NEUROLOGICAL DISORDERS	**7**	
Anxiety Disorders	4	(12.5)
Encephalopathy, Toxic	2	(6.3)
RESPIRATORY DISORDERS	**9**	
Asthma	4	(12.5)
RADS	2	(6.3)
Upper Respiratory Irritation, Chronic or NOS	3	(9.4)
SYMPTOMS and ILL-DEFINED CONDITIONS	**8**	
Fatigue	3	(9.4)
Headache, Chronic or NOS	2	(6.3)
Headache, Migraine	2	(6.3)
Sick Building Syndrome	1	(3.1)
LIVER DISORDERS	**1**	
Hepatitis, Chemical	1	(3.1)
CHEMICAL POISONINGS/SYNDROMES	**2**	
Toxic Effect of Solvents	1	(6.3)
Toxic Effect of Miscellaneous Chemicals	1	(3.1)
MISCELLANEOUS CONDITIONS	**7**	
Multiple Chemical Sensitivity	7	(21.9)

* Organic solvents have been tagged with a special code in the AOEC exposure coding system.

Table E-5 - 19 AOEC Cases with Diagnoses Related to Environmental Pesticide* Exposure, 1997-2000

20 Diagnoses Related to Environmental Pesticide Exposures

DIAGNOSIS GROUP Diagnosis	# of Dx in Group Freq.	(% of Pesticide Cases)
RESPIRATORY DISORDERS	**2**	
Asthma	2	(10.5)
GASTROINTESTINAL DISORDERS	**1**	
Abdominal Pain	1	(5.3)
LIVER DISORDERS	**1**	
Hepatitis, Chemical	1	(5.3)
SKIN DISORDERS	**1**	
Dermatitis, Irritant	1	(5.3)
ACUTE and CHRONIC MUSCULOSKELETAL DISORDERS	**1**	
Myalgia/Myositis	1	(5.3)
SYMPTOMS and ILL-DEFINED CONDITIONS	**6**	
Cough, Chronic or NOS	1	(5.3)
Fatigue	2	(10.5)
Headache, Chemical or NOS	1	(5.3)
Headache, Migraine	1	(5.3)
Skin Sensation Disturbance	1	(5.3)
CHEMICAL POISONINGS/SYNDROMES	**6**	
Toxic Effects of Pesticides	6	(31.6)
MISCELLANEOUS	**2**	
Multiple Chemical Sensitivity	2	(10.5)

* Pesticides have been tagged with a special code in the AOEC exposure coding system.

AOEC DATABASE, 1997 - 2000

"POSSIBLE" TABLES AND FIGURES

Cases Possibly Related to
Occupational or Environmental Exposures
(N=243)

Table P-1 - AOEC Cases Possibly Related to Environmental and/or Occupational Exposures (N= 243)

Demographic Characteristics

	1997	1998	1999	2000	Total Subtotal	(%) (%)
Cases from Participating Clinics	**96**	**52**	**52**	**43**	**243**	**(100.0)**
Cambridge, Massachusetts	0	0	1	0	1	(0.4)
Cook County Hospital, Illinois	23	10	18	11	62	(25.5)
Emory University, Georgia	31	11	12	21	75	(30.9)
George Washington University, DC	0	3	4	0	7	(2.9)
Massachusetts Respiratory Hospital	2	2	5	3	12	(4.9)
Michigan State University	3	1	4	2	10	(4.1)
Robert Wood Johnson, NJ	37	25	8	1	71	(29.2)
Toxicology Associates, CO	0	0	0	5	5	(2.1)
Age						
< 20	1	1	0	1	3	(1.2)
20 - 29	8	7	1	3	19	(7.8)
30 - 39	22	11	12	7	52	(21.4)
40 - 49	25	15	17	15	72	(29.6)
50 - 59	25	12	15	7	59	(24.3)
>59	15	6	7	10	38	(15.6)
Gender						
Male	49	23	25	26	123	(50.6)
Female	47	29	27	17	120	(49.4)
Union Member (Occupational cases only, N= 205)						
Yes	10	16	9	3	38	(18.5)
No	54	20	13	8	95	(46.3)
Unknown	13	6	26	27	72	(35.1)

Figure P-1 - Ethnicity
All Possible AOEC Cases
1997-2000 (N= 243)

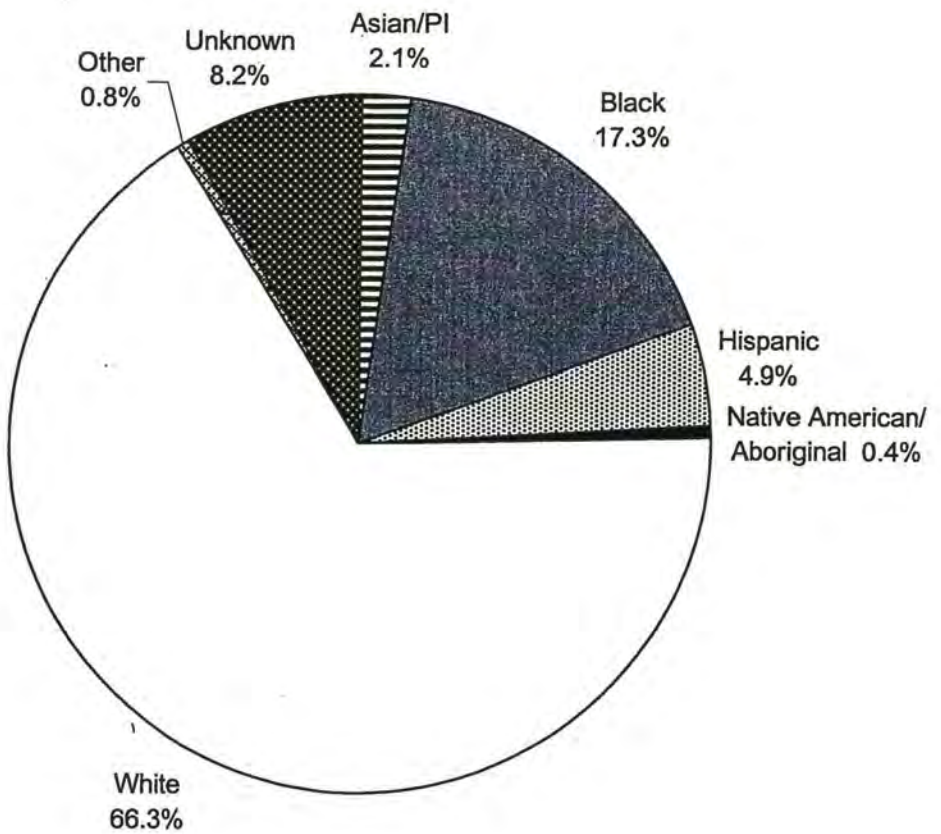

Figure P-2 - Referral Source
Possible AOEC Cases
1997-2000 (N= 243)

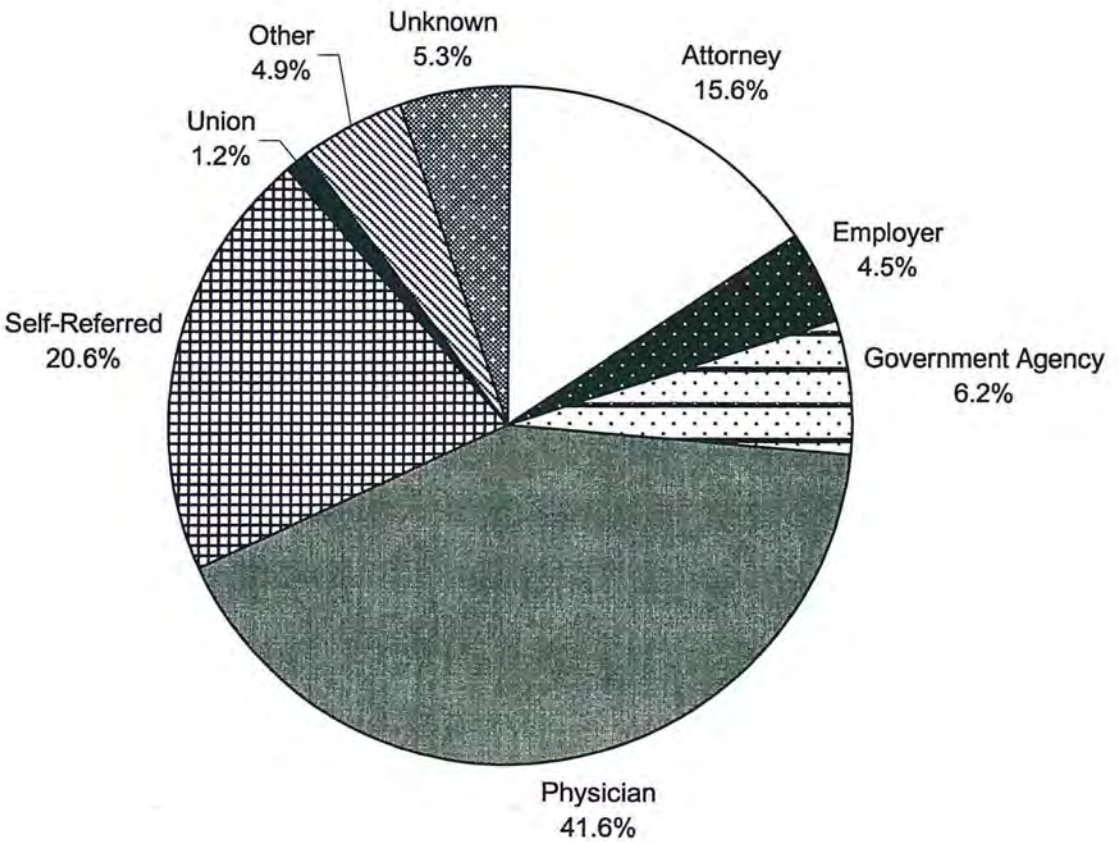

Figure P-3 - Job Status
Possible AOEC Cases, 1997-2000 (N= 205)*
* Occupational Cases Only

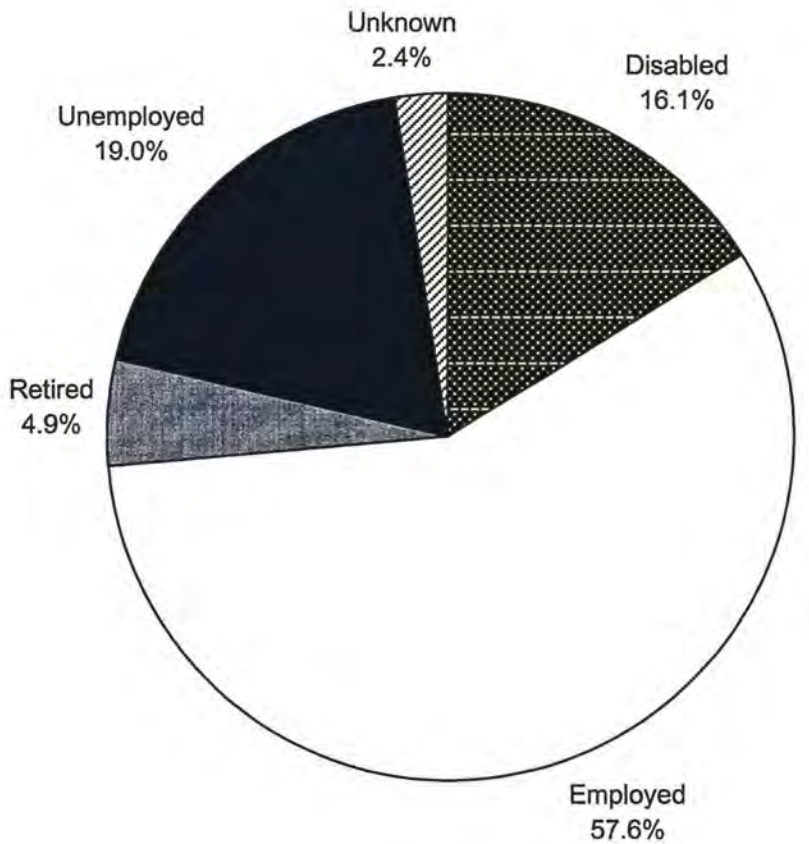

Table P-2 - AOEC Cases Possibly Related to Occupational Exposures (N= 205)

Current or Most Relevant Industry

SIC CODE	INDUSTRY	1997	1998	1999	2000	TOTAL	(%)
01-09	**Agriculture**	**0**	**2**	**0**	**0**	**2**	**(1.0)**
	Agricultural Services					2	
10-14	**Mining**	**1**	**1**	**3**	**4**	**9**	**(4.4)**
	Coal Mining					9	
15-17	**Construction**	**7**	**7**	**6**	**2**	**22**	**(10.7)**
	Building Construction					13	
	Special Trade Contractors					7	
	Heavy Construction					2	
20-39	**Manufacturing**	**27**	**12**	**14**	**9**	**62**	**(30.2)**
	Chemicals & Allied Products					15	
	Transportation Equipment					10	
	Rubber & Miscellaneous Plastics Products					6	
	Electronic & Other Electrical Eqpmt. Except Computers					5	
	Fabricated Metal Prods. Except Machinery & Trans.					5	
	Miscellaneous Manufacturing Industries					5	
	Printing, Publishing, & Allied Industries					3	
	Food and Kindred Products					2	
	Paper and Allied Products					2	
	Stone, Clay, Glass, & Concrete Products					2	
	Primary Metal Industries					2	
	Textile Mill Products					1	
	Petroleum Refining and Related Industries					1	
	Leather and Leather Products					1	
	Industrial &Commercial Machinery & Eqpmt.					1	
	Measuring, Analyzing, & Controlling Instruments					1	
40-49	**Transport, Communic, Elect, Gas & Sanitary Svcs**	**11**	**4**	**5**	**3**	**23**	**(11.2)**
	Railroad Transportation					6	
	Communications					5	
	Electric, Gas, and Sanitary Services					5	
	Local and Suburban Transit					2	
	United States Postal Service					2	
	Transportation by Air					2	
	Transportation Services					1	
50-51	**Wholesale Trade**	**0**	**0**	**2**	**0**	**2**	**(1.0)**
	Wholesale Trade- Durable Goods					2	
52-59	**Retail Trade**	**4**	**0**	**1**	**0**	**5**	**(2.4)**
	Food Stores					2	
	Eating and Drinking Places					1	
	General Merchandise Stores					1	
	Miscellaneous Retail					1	

Table P-2, continued. Current or Most Relevant Industry

SIC CODE	INDUSTRY	1997	1998	1999	2000	TOTAL	(%)
60-67	**Finance, Insurance and Real Estate**	**3**	**2**	**2**	**1**	**8**	**(3.9)**
	Depository Institutions					2	
	Insurance Agents, Brokers, and Service					2	
	Insurance Carriers					2	
	Holding and other Investment Offices					1	
	Real Estate					1	
70-89	**Services**	**13**	**11**	**9**	**13**	**46**	**(22.4)**
	Business Services					11	
	Personal Services					8	
	Educational Services					8	
	Automotive Repair, Services, and Parking					4	
	Engineering, Accounting, Research, Mgmt, and other Svcs.					4	
	Health Services					3	
	Miscellaneous Repair Services					2	
	Miscellaneous Services					2	
	Hotels, Rooming Houses, Camps, and Other Lodging					1	
	Legal Services					1	
	Membership Organizations					1	
	Private Households					1	
91-97	**Public Administration**	**6**	**3**	**1**	**1**	**11**	**(5.4)**
	Exec, Legislative, & Gen Gov't Except Finance					4	
	Justice, Public Order, and Safety					3	
	Administr of Human Resource Programs					2	
	Administr of Environ Quality & Housing Programs					1	
	National Security & International Affairs					1	
	Missing/Unclassifiable	**5**	**0**	**5**	**5**	**15**	**(7.3)**
	Total	**77**	**42**	**48**	**38**	**205**	

Table P-3 - AOEC Cases Possibly Related to Occupational Exposures, 1997 - 2000 (N= 205)*

Current or Most Relevant Occupation

SOC CODE	OCCUPATION	1997	1998	1999	2000	Total	(%)
11-14	**Executive, Administrative, & Managerial**	**7**	**4**	**1**	**2**	**14**	**(6.8)**
	Managers; Service Organizations					3	
	Acct, Auditors, & Oth Financial Specialists					2	
	Financial Managers					2	
	General Managers & Other Top Executives					2	
	Management Related Occupations, NEC					2	
	Public Utilities Managers					2	
	Managers; Administrative Services					1	
16	**Engineers and Architects**	**1**	**1**	**0**	**1**	**3**	**(1.5)**
17-18	**Natural Scientists & Mathematicians**	**4**	**2**	**1**	**0**	**7**	**(3.4)**
	Physical Scientists					4	
	Life Scientists					3	
19-21	**Social Scientists, Social Wrkrs & Lawyers**	**1**	**0**	**2**	**0**	**3**	**(1.5)**
22-25	**Teachers, Librarians and Counselors**	**1**	**1**	**2**	**2**	**6**	**(2.9)**
26-28	**Health Diagnosing & Treating Practit'ers**	**0**	**0**	**0**	**1**	**1**	**(0.5)**
32-33	**Writers, Artists and Entertainers**	**1**	**0**	**2**	**0**	**3**	**(1.5)**
37-39	**Technologists & Technicians, Exc Health**	**0**	**0**	**3**	**2**	**5**	**(2.4)**
	Science Technologists & Technicians, NEC					4	
	Programmers					1	
40-44	**Marketing and Sales Occupations**	**2**	**1**	**1**	**1**	**5**	**(2.4)**
45-47	**Administr Support Occ's, Incl Clerical**	**8**	**2**	**5**	**2**	**17**	**(8.3)**
	Mat'l Recording, Sched, & Distributing Clerks					4	
	Correspondence Clerks and Order Clerks					3	
	General Office Occupations					2	
	Secretaries, Stenographers, and Typists					2	
	Misc Admin Support Occs, Incl Clerical					1	
	Adjusters, Investigators, and Collectors					1	
	Communications Equipment Operators					1	
	Financial Record Processing Occupations					1	
	Mail and Message Distributing Occupations					1	
	Record Clerks					1	
50-52	**Service Occupations**	**8**	**6**	**4**	**6**	**24**	**(11.7)**
	Cleaning/Bldg Svc Occs, Exc Priv Household					12	
	Personal Service Occupations					6	
	Firefighting & Fire Prevention Occupations					2	
	Food & Beverage Prep & Service Occupations					1	
	Guards					1	
	Health Service Occupations					1	
	Launderers and Ironers					1	

SOC CODE	OCCUPATION	1997	1998	1999	2000	Total	(%)*
55-56	**Agriculture-Related Occupations**	**0**	**3**	**0**	**0**	**3**	**(1.5)**
60-61	**Mechanics and Repairers**	**12**	**1**	**1**	**2**	**16**	**(7.8)**
	Vehicle & Mobile Equipment Mechanics					5	
	Electrical & Electronic Equipmt Repairers					3	
	Industrial Machinery Repairers					2	
	Miscellaneous Mechanics and Repairers					6	
63-65	**Construction and Extractive Occupations**	**5**	**6**	**4**	**5**	**20**	**(9.8)**
	Extractive Occupations, NEC					9	
	Electricians & Power Transmission Installers					5	
	Carpenters and Related Workers					3	
	Plumbers, Pipefitters, and Steamfitters					2	
	Painters, Paperhangers, and Plasterers					1	
67-69	**Precision Production Occupations**	**5**	**3**	**2**	**2**	**12**	**(5.9)**
	Precision Metal Workers					9	
	Precision Workers; Assorted Materials					1	
	Supervisors; Precision Production Occups					1	
	Miscellaneous Plant or System Operators					1	
71-78	**Production Working Occupation**	**14**	**8**	**11**	**5**	**38**	**(18.5)**
	Machine Operators & Tenders; Assorted Mat'l					12	
	Assemblers					10	
	Welders and Solderers					4	
	Hand Working Occupations					3	
	Metalworking and Plastic Working Machine Setup					3	
	Production Inspectors, Checkers, and Examiners					2	
	Textile, Apparel & Furnishings Machine Op/Tender					2	
	Metal & Plastic Processing Machine Setup Operators					1	
	Supervisors; Production Occupations					1	
81-83	**Transportation & Mat'l Moving Occups**	**1**	**0**	**1**	**1**	**3**	**(1.5)**
86-87	**Handlers, Eqpmt Cleaners, Helpers & Lab's**	**7**	**4**	**4**	**1**	**16**	**(7.8)**
	Construction Laborers					5	
	Freight, Stock, & Material Movers; Hand					3	
	Parking Lot Attendants					1	
	Vehicle Washers and Equipment Cleaners					1	
	Miscellaneous Manual Occupations					6	
91	**Military Occupations**	**0**	**0**	**0**	**1**	**1**	**(0.5)**
99	**Miscellaneous/Missing Occupations**	**0**	**0**	**4**	**4**	**8**	**(3.9)**
	Total	**77**	**42**	**48**	**38**	**205**	**(100.0)**

* Percents do not total 100 due to rounding.

Table P-4 - AOEC Possibly-Related Occupational Cases Belonging to Unions, 1997-2000 (N=38)

Union Membership

Union Name	Total	(%)*
Aluminum, Brick, and Glass Workers International Union	1	(2.6)
United **Automobile**, Aerospace, and Agricultural Implement Workers of America	3	(7.9)
Intern'l Brotherhood of **Boilermakers**, Iron Ship Builders, Blacksmith Forgers & Helpers	1	(2.6)
International **Chemical** Workers Union	1	(2.6)
National **Education** Association	1	(2.6)
International Brotherhood of **Electrical** Workers	3	(7.9)
International Association of **Firefighters**	1	(2.6)
Laborers International Union	1	(2.6)
Laundry and Dry Cleaning International Union	1	(2.6)
International **Longshoremen's** and Warehousemen's Union	1	(2.6)
International Association of **Machinists** and Aerospace Workers	1	(2.6)
United **Mine** Workers	6	(15.8)
Oil Chemical Atomic Workers	1	(2.6)
International Brotherhood of **Painters** and Allied Trades	2	(5.3)
Brotherhood of **Railway** Carmen	1	(2.6)
United **Rubber**, Cork, Linoleum, and Plastic Workers of America	1	(2.6)
American Federation of **State**, County, and Municipal Employees	4	(10.5)
Intern'l Brotherhood of **Teamsters**, Chauffeurs, Warehousemen, & Helpers of America	1	(2.6)
United **Textile** Workers of America	1	(2.6)
Amalgamated **Transit** Union	1	(2.6)
Unknown/Incomplete Union Name	5	(13.2)
Total	**38**	

* Percents do not total to 100 due to rounding.

Table P-5- AOEC Cases Possibly Related to Occupational or Environmental Exposures, 1997-2000 (243 Cases, 303 Hazards)

303 Possibly Related Hazards

HAZ CODE	HAZARD	FREQ	(%) of HAZARDS
010	**MINERAL AND INORGANIC DUST**	**34**	**(11.2)**
010.00	Dust, NOS	8	(2.6)
010.01	Abrasives, NOS	1	(0.3)
010.02	Asbestos	10	(3.3)
010.06	Coal	9	(3.0)
010.09	Man-Made Mineral Fibers	4	(1.3)
010.13	Silica, Crystalline	1	(0.3)
012	Talcs		
012.00	Talc	1	(0.3)
020	**METALS AND METALLOIDS**	**30**	**(9.9)**
020.00	Metal Fumes, NOS	1	(0.3)
020.01	Aluminum	1	(0.3)
020.05	Arsenic	1	(0.3)
020.10	Boron	1	(0.3)
020.12	Cadmium	3	(1.0)
020.16	Copper	2	(0.7)
020.21	Lead, Inorganic	7	(2.3)
020.25	Mercury, Inorganic	2	(0.7)
020.26	Mercury, Organic	1	(0.3)
020.28	Nickel	1	(0.3)
020.39	Zinc	2	(0.7)
020.46	Heavy Metals, NOS	3	(1.0)
020.50	Strontium	1	(0.3)
022	Hexavalent Chromium Compounds		
022.00	Chromium, Hexavalent, NOS	1	(0.3)
023	Welding Exposures		
023.00	Welding, NOS	3	(1.0)
040	**MISCELLANEOUS INORGANIC COMPOUNDS**	**6**	**(2.0)**
040.00	Inorganic Compounds, NOS	1	(0.3)
040.04	Carbon Monoxide	3	(1.0)
040.06	Hydrogen Sulfide	1	(0.3)
040.20	Sulfur Oxides	1	(0.3)

Table P-5, continued. 303 Possibly Related Hazards

050	**ACIDS, BASES, AND OXIDIZING AGENTS**	**10**	**(3.3)**
050.00	Acids, Bases, Oxidizers, NOS	2	(0.7)
050.10	Hydrochloric Acid	1	(0.3)
050.13	Nitric Acid	1	(0.3)
050.14	Peroxides	1	(0.3)
050.15	Phosphoric Acid	1	(0.3)
050.24	Sulfuric Acid	2	(0.7)
050.35	Calcium Carbonate	1	(0.3)
052	Ammonia Compounds		
052.01	Ammonia Gas	1	(0.3)
060	**ALIPHATIC AND ALICYCLIC HYDROCARBONS**	**8**	**(2.6)**
060.00	Aliphatic Hydrocarbons, NOS	1	(0.3)
060.02	Hexane	1	(0.3)
060.03	Heptane	1	(0.3)
060.19	Pentane	1	(0.3)
061	Petroleum Derivatives		
061.01	Petroleum Spirits	1	(0.3)
061.04	Gasoline	2	(0.7)
061.05	Jet Fuel	1	(0.3)
070	**ALCOHOLS**	**2**	**(0.7)**
070.06	Isopropyl Alcohol	1	(0.3)
070.07	Methanol	1	(0.3)
080	**GLYCOLS**	**2**	**(0.7)**
080.01	Ethylene Glycol	2	(0.7)
090	**GLYCOL ETHERS**	**2**	**(0.7)**
090.00	Glycol Ethers, NOS	2	(0.7)
100	**ETHERS**	**1**	**(0.3)**
100.08	Methyl Ethyl Butyl Ether	1	(0.3)
110	**EPOXY COMPOUNDS**	**4**	**(1.3)**
110.02	Epoxy Resins	1	(0.3)
110.03	Ethylene Oxide	2	(0.7)
110.06	Adhesive, Epoxy	1	(0.3)
120	**ALDEHYDES AND ACETALS**	**2**	**(0.7)**
120.03	Formaldehyde	2	(0.7)

Table P-5, continued. 303 Possibly Related Hazards

130	**KETONES**	**3**	**(1.0)**
130.01	Acetone	1	(0.3)
130.03	Methyl Ethyl Ketone	2	(0.7)
140	**ESTERS**	**5**	**(1.7)**
141	Acetates		
141.00	Acetates, NOS	1	(0.3)
141.02	Butyl Acetate	1	(0.3)
141.04	Vinyl Acetate	1	(0.3)
142	Acrylates		
142.01	Acrylic Monomer	1	(0.3)
142.05	Ethyl Acrylate	1	(0.3)
150	**CARBOXYLIC ACIDS AND ANHYDRIDES**	**1**	**(0.3)**
151	Anhydrides		
151.03	Trimellitic Anhydride	1	(0.3)
160	**AROMATIC HYDROCARBONS**	**10**	**(3.3)**
160.00	Aromatic Hydrocarbons, NOS	1	(0.3)
160.01	Benzene	2	(0.7)
160.02	Toluene	1	(0.3)
160.03	Xylene	1	(0.3)
160.04	Styrene	1	(0.3)
160.05	Naphthalene	2	(0.7)
161	Polycyclic Aromatic Hydrocarbons		
161.00	Polycyclic Aromatic Hydrocarbons, NOS	1	(0.3)
161.01	Anthracene	1	(0.3)
170	**HYDROCARBONS, NOS**	**41**	**(13.5)**
170.00	Hydrocarbons, NOS	3	(1.0)
170.01	Cutting Oils	3	(1.0)
170.03	Oils, NOS	1	(0.3)
171	Solvents, NOS		
171.00	Solvents, NOS	30	(9.9)
171.01	Paint	4	(1.3)
190	**HALOGENATED ALIPHATIC HYDROCARBONS (EXCEPT ORGANOCHLORINE PESTICIDES)**	**11**	**(3.6)**
190.00	Chlorinated Hydrocarbons, NOS	3	(1.0)
190.01	Carbon Tetrachloride	1	(0.3)
190.08	Methyl Chloroform (1,1,1-Trichloroethane)	1	(0.3)
190.10	Perchlorethylene	2	(0.7)
190.12	1,1,2-Trichloroethane	1	(0.3)
190.13	Trichloroethylene	3	(1.0)

Table P-5, continued. 303 Possibly Related Hazards

200	**HALOGENATED AROMATIC HYDROCARBONS**	**2**	**(0.7)**
200.07	PCBs	2	(0.7)
210	**CYANIDES AND NITRILES**	**2**	**(0.7)**
211	Cyanides		
211.00	Cyanides, NOS	2	(0.7)
220	**ISOCYANATES**	**6**	**(2.0)**
221	Diisocyanates		
221.00	Cyanides, NOS	6	(2.0)
250	**AROMATIC NITRO AND AMINO COMPOUNDS (INCLUDING HETEROCYCLIC)**	**1**	**(0.3)**
250.19	Amino Acids, NOS	1	(0.3)
270	**POLYMERS**	**2**	**(0.7)**
271	Rubber		
271.00	Rubber, NOS	1	(0.3)
271.01	Butadiene and Styrene	1	(0.3)
280	**ORGANOCHLORINE PESTICIDES**	**2**	**(0.7)**
280.00	Organochlorine Pesticides, NOS	1	(0.3)
280.06	Lindane	1	(0.3)
290	**ORGANOPHOSPATE PESTICIDES/ CARBAMATE PESTICIDES**	**5**	**(1.7)**
291	Organophosphate Pesticides		
291.00	Organophosphate Pesticides, NOS	3	(1.0)
291.05	Chlorpyrifos (Dursban)	1	(0.3)
292	Carbamate Pesticides		
292.00	Carbamate Pesticides, NOS	1	(0.3)
320	**MISCELLANEOUS CHEMICALS AND MATERIALS REFERENCED BY USE**	**64**	**(21.1)**
320.01	Air Pollutants, Indoor	16	(5.3)
320.02	Air Pollutants, Outdoor	1	(0.3)
320.06	Chemicals, NOS	11	(3.6)
320.11	Glues, NOS	1	(0.3)
320.12	Hair Products	2	(0.7)
320.13	Herbicides, NOS	3	(1.0)
320.14	Lubricants, NOS	1	(0.3)
320.16	Pesticides, NOS	7	(2.3)
320.28	Cosmetics, NOS	1	(0.3)
320.35	Carpet Dust	1	(0.3)

Table P-5, continued. 303 Possibly Related Hazards

321	Pharmaceutical Compounds		
321.00	Pharmaceuticals, NOS	1	(0.3)
322	Cleaning Materials		
322.00	Cleaning Materials, NOS	3	(1.0)
322.01	Soap	3	(1.0)
322.04	Cleaners, Household, General Purpose	1	(0.3)
322.07	Ammonia Solution, NOS	1	(0.3)
322.10	Bleach	1	(0.3)
322.18	Cleaners, Detergent, NOS	1	(0.3)
322.32	Quaternary Ammonium Compounds, NOS	2	(0.7)
323	Waste		
323.01	Waste, Hazardous	1	(0.3)
323.03	Sewer Water (Sewage)	1	(0.3)
327	Water Contamination		
327.00	Water Contamination, NOS	5	(1.7)
330	**PYROLYSIS PRODUCTS**	**7**	**(2.3)**
330.01	Cigarette Smoke	1	(0.3)
330.03	Smoke, NOS	3	(1.0)
330.04	Incinerator Fume	1	(0.3)
331	Exhaust		
331.01	Diesel Exhaust	1	(0.3)
331.02	Engine Exhaust	1	(0.3)
350	**PHYSICAL FACTORS**	**7**	**(2.3)**
350.01	Physical Factors, NOS	2	(0.7)
352	Non-Ionizing Radiation		
352.00	Radiation, Nonionizing, NOS	1	(0.3)
352.01	Radiation, Electromagnetic	1	(0.3)
353	Trauma-Related Exposures		
353.03	Fall, NOS	1	(0.3)
354	Vibration		
354.00	Vibration, NOS	2	(0.7)
360	**ERGONOMIC FACTORS**	**18**	**(5.9)**
360.02	Keyboard Use	3	(1.0)
360.03	Repetitive Motion	6	(2.0)
360.04	Stress	2	(0.7)
361	Force		
361.02	Lifting	5	(1.7)
362	Posture		
362.02	Posture, Body- Static	2	(0.7)

Table P-5, continued. 303 Possibly Related Hazards

370	**PLANT MATERIAL**	**2**	**(0.7)**
370.47	Cocoa Bean	1	(0.3)
373	Wood Dusts		
373.00	Wood Dust, NOS	1	(0.3)
380	**ANIMAL MATERIALS**	**3**	**(1.0)**
380.04	Dander, Animal	1	(0.3)
380.20	Rat Feces	1	(0.3)
382	Insect Materials		
382.13	Mites, NOS	1	(0.3)
390	**MICROORGANISMS**	**9**	**(3.0)**
390.01	Mold	9	(3.0)
UNKNOWN/UNCLASSIFIED EXPOSURES		**1**	**(0.3)**
TOTAL		**303**	**(100.0)**

Table P-6 - Diagnoses and Possibly Related Exposures of 243 AOEC Cases, 1997-2000

284 Diagnoses and Related Environmental Exposures

DIAGNOSIS GROUP	# of Cases in Group w/ Dx	
DIAGNOSIS (DX) Hazard	**# of Cases w/ Dx** Hazard Freq	**(% of Cases)**
INFECTIOUS AND PARASITIC DISEASES	**1**	
Sarcoidosis	**1**	**(0.4)**
Wood Dust, NOS	1	
TUMORS	**6**	
Cancer, Bladder	**1**	**(0.4)**
Glycol Ethers, NOS	1	
Leukemia, NOS	**1**	**(0.4)**
Chemicals, NOS	1	
Non-Hodgkin's Lymphoma	**4**	**(1.6)**
1,1,2-Trichloroethane	1	
Asbestos	1	
Benzene	1	
Butadiene and Styrene	1	
Chemicals, NOS	1	
Smoke, NOS	1	
PSYCHIATRIC and NEUROLOGICAL DISORDERS	**28**	
Anxiety Disorders	**2**	**(0.8)**
Gasoline	1	
Paint	1	
Waste, Hazardous	1	
Dementia	**1**	**(0.4)**
Aluminum	1	
Lead, Inorganic	1	
Solvents, NOS	1	
Encephalopathy, Toxic	**3**	**(1.2)**
Solvents, NOS	3	
Lead, Inorganic	1	
Isocyanates, NOS	1	

Depression, NOS	**10**	**(4.1)**
Solvents, NOS	3	
Pesticides, NOS	2	
Glycol Ethers, NOS	1	
Heavy Metals, NOS	1	
Inorganic Compounds, NOS	1	
Mercury, Organic	1	
Methyl Chloroform	1	
Mold, NOS	1	
PCBs	1	
Radiation, Electromagnetic	1	
Rat Feces	1	
Trichloroethylene	1	
Meningitis	**1**	**(0.4)**
Oils, NOS	1	
Neuropathy, Peripheral/Poly	**3**	**(1.2)**
Lindane	1	
Mercury, Inorganic	1	
Organophosphate Pesticides, NOS	1	
Organic Brain Syndrome/Cognitive Disorders	**5**	**(2.0)**
Solvents, NOS	3	
Lead, Inorganic	2	
Mold, NOS	1	
Pesticides, NOS	1	
Rat Feces	1	
Somatoform Disorders, NOS	**1**	**(0.4)**
Chemicals, NOS	1	
DISORDERS OF SENSORY ORGANS*	**7**	
Visual Disturbances, NOS	**1**	**(0.4)**
Dander, Animal	1	
Conjunctivitis	**1**	**(0.4)**
Air Pollutants, Indoor	1	
Mites, NOS	1	
Mold, NOS	1	
Chalazion	**1**	**(0.4)**
Air Pollutants, Indoor	1	
Mites, NOS	1	
Mold, NOS	1	
Other Sensory Disorders	**2**	**(0.8)**
Solvents, NOS	2	
Organic Chemicals, NOS	1	

* *Many cases of eye irritation have been reported in combination with upper respiratory irritation. These cases are included with the respiratory diagnoses, and are not included here.*

Noise Induced Hearing Loss	**2**	**(0.8)**
Noise	2	
CARDIOVASCULAR DISEASE	**2**	
Phlebitis and Thrombophlebitis	**2**	**(0.8)**
Posture, Body- Static	2	
RESPIRATORY DISORDERS	**103**	
Asbestosis	**5**	**(2.0)**
Asbestos	4	
Fiberglass	1	
Asthma	**32**	**(13.2)**
Air Pollutants, Indoor	3	
Isocyanates, NOS	3	
Mold, NOS	3	
Solvents, NOS	3	
Carbon Monoxide	2	
Chemicals, NOS	2	
Dust, NOS	2	
Welding, NOS	2	
Amino Acids, NOS	1	
Aromatic Hydrocarbons, NOS	1	
Butyl Acetate	1	
Carpet Dust	1	
Cleaners, Detergent, NOS	1	
Cleaning Materials, NOS	1	
Cocoa Bean	1	
Cutting Oils	1	
Glues, NOS	1	
Hair Products	1	
Herbicides, NOS	1	
Hydrocarbons, NOS	1	
Methanol	1	
Paint	1	
Pesticides, NOS	1	
Rat Feces	1	
Rubber	1	
Styrene	1	
Talc	1	
Trichloroethylene	1	
Trimetallic Anhydride	1	
Vinyl Acetate	1	

Bronchitis, Chronic or NOS (Including Asthmatic)	**10**	**(4.1)**
Coal	4	
Adhesive, Epoxy	1	
Ammonia Gas	1	
Asbestos	1	
Chemicals, NOS	1	
Ethylene Glycol	1	
Hydrogen Sulfate	1	
Chronic Obstructive Pulmonary Disease (COPD)	**2**	**(0.8)**
Lubricants, NOS	1	
Solvents, NOS	1	
Emphysema	**2**	**(0.8)**
Cutting Oils	1	
Nitric Acid	1	
Sulfuric Acid	1	
Hypersensitivity Pneumonitis	**2**	**(0.8)**
Cutting Oils	1	
Welding Fumes, NOS	1	
Interstitial Pulmonary Fibrosis	**2**	**(0.8)**
Cadmium	1	
Calcium Carbonate	1	
Copper	1	
Pneumoconiosis, Coal Workers	**5**	**(2.0)**
Coal	5	
Pneumoconiosis, Mixed Dust	**2**	**(0.8)**
Acids, Bases, Oxidizers, NOS	1	
Smoke, NOS	1	
Pleural Plaques	**1**	**(0.4)**
Asbestos	1	
Reactive Airway Disease (RADS)	**9**	**(3.7)**
Chemicals, NOS	2	
Bleach	1	
Cyanides, NOS	1	
Hydrochloric Acid	1	
Organophosphate Pesticides, NOS	1	
Perchlorethylene	1	
Solvents, NOS	1	
Zinc	1	
Restrictive Pulmonary Disease	**2**	**(0.8)**
Asbestos	2	

Upper Respiratory Irritation, Chronic or NOS (Sinusitis/rhinitis/pharyngitis/laryngitis)	**26**	**(10.7)**
Air Pollutants, Indoor	4	
Dust, NOS	3	
Mold, NOS	2	
Solvents, NOS	2	
Abrasives, NOS	1	
Acetone	1	
Asbestos	1	
Cosmetics, NOS	1	
Cyanides, NOS	1	
Dander, Animal	1	
Epoxy Resins	1	
Ethyl Acrylate	1	
Formaldehyde	1	
Hydrogen Sulfate	1	
Paint	1	
Peroxides	1	
Pharmaceuticals, NOS	1	
Polycyclic Aromatic Hydrocarbons, NOS	1	
Quaternary Ammonium Compounds, NOS	1	
Smoke, NOS	1	
Vocal Cord Disorders	**1**	**(0.4)**
Dust, NOS	1	
Mold, NOS	1	
Non-Specific Respiratory Disorders	**2**	**(0.8)**
Air Pollutants, Indoor	1	
Mold, NOS	1	
GASTROINTESTINAL DISORDERS	**2**	
Digestive Disorders, NOS	**2**	**(0.8)**
Chromium, Hexavalent, NOS	1	
Sewage	1	
ENDOCRINE, NUTRITIONAL, METABOLIC & IMMUNE	**1**	
Blood Clotting Disorders, NOS	**1**	**(0.4)**
Solvents, NOS	1	
RENAL DISORDERS	**2**	
Glomerulonephritis	**1**	**(0.4)**
Carbon Tetrachloride	1	
Gasoline	1	
Heavy Metals, NOS	1	
Renal Failure, NOS	**1**	**(0.4)**
Perchlorethylene	1	

REPRODUCTIVE DISORDERS	**1**	
Pregnancy Complications	**1**	**(0.4)**
Radiation, Nonionizing, NOS	1	
SKIN DISORDERS	**16**	
Skin Disorders, NOS	**1**	**(0.4)**
Boron	1	
Fiberglass	1	
Contact Dermatitis	**14**	**(5.8)**
Chemicals, NOS	3	
Dust, NOS	2	
Soap	2	
Solvents, NOS	2	
Amino Acids, NOS	1	
Bleach	1	
Carbamate Pesticides, NOS	1	
Hair Products	1	
Isocyanates, NOS	1	
Man-Made Mineral Fibers	1	
Phosphoric Acid	1	
Polycyclic Aromatic Hydrocarbons, NOS	1	
Quaternary Ammonium Compounds	1	
Water Contamination, NOS	1	
Rash, NOS	**1**	**(0.4)**
Solvents, NOS	1	
ACUTE and CHRONIC MUSCULOSKELETAL DISORDERS	**22**	
LOW BACK PROBLEMS (2)		
Herniated Disc- Lumbar	**1**	**(0.4)**
Lifting	1	
Pain, Low Back	**1**	**(0.4)**
Lifting	1	
UPPER EXTREMITY PROBLEMS- SHOULDER (1)		
Thoracic Outlet Syndrome	**1**	**(0.4)**
Repetitive Motion	1	

UPPER EXTREMITY PROBLEMS - ARM/HAND/WRIST (4)		
Degenerative Joint Disease, Elbow/Upper Arm	**1**	**(0.4)**
Lifting	1	
Carpal Tunnel Syndrome	**2**	**(0.8)**
Heavy Metals, NOS	1	
Pesticides, NOS	1	
Repetitive Motion	1	
Volatile Organic Chemicals, NOS	1	
Epicondylitis	**1**	**(0.4)**
Keyboard Use	1	
CTDs OR MUSCULOSKELETAL PAIN, LOCATION NOT SPECIFIED (15)		
Osteoarthritis, NOS	**3**	**(1.2)**
Lifting	1	
Repetitive Motion	1	
Trauma, Acute, NOS	1	
Joint Pain, NOS	**1**	**(0.4)**
Water Contamination, NOS	1	
Tendinitis/Bursitis/Tenosynovitis, NOS	**3**	**(1.2)**
Repetitive Motion	2	
Vibration, NOS	1	
Muscle Spasm, NOS	**1**	**(0.4)**
Stress	1	
Unspecified Cumulative Trauma Disorders, Fibromyalgia, Or Musculoskeletal Pain, Location not Specified	**7**	**(2.9)**
Keyboard Use	2	
Ethylene Oxide	1	
Lifting	1	
Solvents, NOS	1	
Peroxides	1	
Repetitive Motion	1	
Waste, Hazardous	1	
SYMPTOMS AND ILL-DEFINED CONDITIONS	**64**	
Abdominal Pain, NOS	**1**	**(0.4)**
Solvents, NOS	1	
Abnormal Blood Test Results	**1**	**(0.4)**
Pesticides, NOS	1	
Abnormal Urine Test Results	**1**	**(0.4)**
Cadmium	1	
Chest Pain	**1**	**(0.4)**
Smoke, NOS	1	

Cough, Chronic or NOS	**9**	**(3.7)**
Air Pollutants, Indoor	2	
Acrylate	1	
Air Pollutants, Outdoor	1	
Asbestos	1	
Dust, NOS	1	
Incinerator Fume	1	
PCBs	1	
Silica, Crystalline	1	
Dizziness	**3**	**(1.2)**
Acetates, NOS	1	
Air Pollutants, Indoor	1	
Methyl Ethyl Ketone	1	
Dyspnea	**4**	**(1.6)**
Air Pollutants, Indoor	2	
Asbestos	1	
Diesel Exhaust	1	
Fiberglass	1	
Fatigue	**8**	**(3.3)**
Water Contamination, NOS	2	
Acetates, NOS	1	
Air Pollutants, Indoor	1	
Cadmium	1	
Methyl Ethyl Ketone	1	
Naphthalene	1	
Solvents, NOS	1	
Headache, Chronic or NOS	**15**	**(6.2)**
Solvents, NOS	4	
Naphthalene	2	
Air Pollutants, Indoor	1	
Aluminum	1	
Cleaners, Household, General Purpose	1	
Dander, Animal	1	
Formaldehyde	1	
Isocyanates, NOS	1	
Lead, Inorganic	1	
Mold, NOS	1	
Pesticides, NOS	1	
Quaternary Ammonium Compounds	1	
Smoke, NOS	1	
Stress	1	
Sulfur Oxides	1	
Xylene	1	
Headache, Migraine	**2**	**(0.8)**
Aliphatic Hydrocarbons, NOS	1	
Benzene	1	
Ethylene Glycol	1	
MTBE	1	

Nervousness	**1**	**(0.4)**
Vibration, NOS	1	
Seizures, NOS	**1**	**(0.4)**
Copper	1	
Cyanides, NOS	1	
Zinc	1	
Sick Building Syndrome and Other General Symptoms	**11**	**(4.5)**
Air Pollutants, Indoor	3	
Solvents, NOS	2	
Carbon Monoxide	1	
Ethylene Oxide	1	
Glycol Ethers, NOS	1	
Hydrogen Sulfide	1	
Lead, Inorganic	1	
Water Contamination, NOS	1	
Skin Sensation Disturbances	**2**	**(0.8)**
Chlorpyrifos	1	
Petroleum Spirits	1	
Tremors, NOS	**1**	**(0.4)**
Waste, Hazardous	1	
Signs or Symptoms, NOS	**3**	**(1.2)**
Mercury, Inorganic	1	
Isopropyl Alcohol	1	
Strontium	1	
TRAUMATIC INJURIES, NOT INCLUDING MUSCULOSKELETAL AND EYE	**1**	**(0.4)**
Burn, Chemical	**1**	**(0.4)**
Acids, Bases, and Oxidizers, NOS	1	
CHEMICAL POISONINGS/SYNDROMES	**20**	**(8.2)**
Toxic Effect of Solvents	**6**	**(2.5)**
Chlorinated Hydrocarbons, NOS	3	
Heptane	1	
Jet Fuel	1	
Methyl Ethyl Ketone	1	
Solvents, NOS	1	
Toluene	1	
Toxic Effect of Lead	**3**	**(1.2)**
Lead, Inorganic	3	

Toxic Effect of Metals Other than Lead	**2**	**(0.8)**
Arsenic	1	
Metal Fumes, NOS	1	
Toxic Effect of Gas/Fumes/Vapors	**1**	**(0.4)**
Chemicals, NOS	1	
Toxic Effect of Pesticides	**2**	**(0.8)**
Organochlorine Pesticides, NOS	1	
Organophosphate Pesticides, NOS	1	
Pesticides, NOS	1	
Toxic Effect of Miscellaneous Chemicals	**6**	**(2.5)**
Chemicals, NOS	1	
Heavy Metals, NOS	2	
Pesticides, NOS	2	
Hydrocarbons, NOS	1	
Inorganic Compounds, NOS	1	
Solvents, NOS	1	
PCBs	1	
Unknown Exposure	1	
MISCELLANEOUS CONDITIONS	**15**	**(6.2)**
Multiple Chemical Sensitivity	**10**	**(4.1)**
Solvents, NOS	3	
Herbicides, NOS	2	
Air Pollutants, Indoor	1	
Cigarette Smoke	1	
Cleaning Materials, NOS	1	
Engine Exhaust	1	
Hexane	1	
Jet Fuel	1	
Paint	1	
Pentane	1	
Pesticides, NOS	1	
Trichloroethylene	1	
Water Contamination, NOS	1	

Table P-7 - 57 AOEC Cases with Diagnoses Possibly Related to Occupational and/or Environmental Solvent* Exposure, 1997-2000

68 Diagnoses Possibly Related to Occupational/Environmental Solvent Exposures

DIAGNOSIS GROUP Diagnosis	# of Dx in Group Freq.	(% of Solvent Cases)
TUMORS	**3**	
Cancer, Testis	1	(1.8)
Cancer, Other Lymphoid	2	(3.5)
PSYCHIATRIC and NEUROLOGICAL DISORDERS	**13**	
Depression	5	(8.8)
Encephalopathy, Toxic	3	(5.3)
Organic Brain Syndrome	3	(1.8)
Anxiety Disorder	1	(1.8)
Dementia	1	(1.8)
DISORDERS OF SENSORY ORGANS	**2**	
Sensory Disorders, NOS	2	(3.5)
RESPIRATORY DISORDERS	**16**	
Asthma	9	(15.8)
Upper Respiratory Irritation, Chronic or NOS	4	(7.0)
RADS	2	(3.5)
Chronic Obstructive Pulmonary Disease	1	(1.8)
ENDOCRINE, NUTRITIONAL, METABOLIC, AND IMMUNE	**1**	
Blood Clotting Disorder	1	(1.8)
RENAL DISORDERS	**2**	
Glomerulonephritis	1	(1.8)
Renal Failure, NOS	1	(1.8)
SKIN DISORDERS	**3**	
Dermatitis	2	(3.5)
Rash	1	(1.8)
ACUTE and CHRONIC MUSCULOSKELETAL DISORDERS	**1**	
Myalgia/Myositis	1	(1.8)
SYMPTOMS and ILL-DEFINED CONDITIONS	**15**	
Headache, Chronic or NOS	5	(8.8)
Sick Building Syndrome	3	(5.3)
Fatigue	2	(3.5)
Abdominal Pain	1	(1.8)
Dizziness	1	(1.8)
Headache, Migraine	1	(1.8)
Skin Sensation Disturbance	1	(1.8)
Signs or Symptoms, NOS	1	(1.8)
CHEMICAL POISONINGS/SYNDROMES	**7**	
Toxic Effect of Solvents	6	(10.5)
Toxic Effect of Miscellaneous Chemicals	1	(1.8)
MISCELLANEOUS CONDITIONS	**5**	
Multiple Chemical Sensitivity	5	(8.8)

* Organic solvents have been tagged with a special code in the AOEC exposure coding system.

Table P-8 - 15 AOEC Cases with Diagnoses Possibly Related to Occupational and/or Environmental Pesticide* Exposure, 1997-2000

19 Diagnoses Possibly Related to Occupational/Environmental Pesticide Exposures

DIAGNOSIS GROUP Diagnosis	# of Dx in Group Freq.	(% of Pesticide Cases)
PSYCHIATRIC and NEUROLOGICAL DISORDERS	**5**	
Depression	2	(13)
Neuropathy, Perpheral/Poly	2	(13)
Organic Brain Syndrome	1	(7)
RESPIRATORY DISORDERS	**3**	
Asthma	2	(13)
RADS	1	(7)
SKIN DISORDERS	**1**	
Dermatitis	1	(7)
ACUTE and CHRONIC MUSCULOSKELETAL DISORDERS	**1**	
Carpal Tunnel Syndrome	1	(7)
SYMPTOMS and ILL-DEFINED CONDITIONS	**3**	
Abnormal Blood Test Results	1	(7)
Headache, Chronic or NOS	1	(7)
Skin Sensation Disturbance	1	(7)
CHEMICAL POISONINGS/SYNDROMES	**4**	
Toxic Effect of Pesticides	4	(26)
MISCELLANEOUS CONDITIONS	**2**	
Multiple Chemical Sensitivity	2	(13)

* Pesticides have been tagged with a special code in the AOEC exposure coding system.