

## Texas Preventable Disease



## NEWS

Ron J. Anderson, M.D.  
Chairman  
Texas Board of HealthRobert Bernstein, M.D., F.A.C.P.  
Commissioner

## contents:

Leading Work-Related Diseases and Injuries --  
United States (IX)  
Monthly Statistical SummaryTEXAS STATE DOCUMENTS  
DEPARTMENT OF HEALTH

Bureau of Epidemiology, 1100 West 49th Street, Austin, Texas 78756-3180 (512-458-7207)

LEADING WORK-RELATED DISEASES  
AND INJURIES -- UNITED STATES (IX)\*

*The National Institute for Occupational Safety and Health (NIOSH) has developed a suggested list of ten leading work-related diseases and injuries and has described the first eight categories on that list.<sup>1,2</sup> A discussion of the ninth category, Dermatologic Conditions, appears below.*

## DERMATOLOGIC CONDITIONS

## Background

A worker's skin is directly exposed to the occupational environment and is susceptible to a large number of dermatologic injuries and other conditions (Table 1). Complete data on the extent and cost of dermatologic injuries are not available; however, dermatologic conditions other than injuries accounted for 37% of the 106,100 occupational illnesses recorded in 1983 in the Bureau of Labor Statistics (BLS) Annual Survey of Occupational Injuries and Illnesses.\*\* Results from the BLS Annual Survey for 1972-1976† indicated that 20% to 25% of all occupational dermatologic conditions resulted in lost time from work (average 10 to 12 lost work days). Similar data based on workers' compensation claims have been reported from California and South Carolina. Assuming that only 2% to 10% of cases are actually reported, the annual cost of occupational dermatologic conditions resulting from lost worker productivity, medical care, and disability payments may range between \$222 million and \$1 billion.

Because 10% to 15% of requests that NIOSH receives for health hazard evaluations involve skin complaints, and because the economic impact of work-related dermatologic conditions is substantial, NIOSH has included dermatologic conditions on its list of ten leading work-related diseases and injuries in the United States.

## Dermatologic Injuries

Dermatologic injuries are usually described as the immediate adverse effects on skin that result from instantaneous trauma or brief exposure to toxic agents involving a single incident in the work environment. Skin injuries may constitute 23% to 35% of all injuries. Thus, based on 4,748,000 injuries of all types, and a full-time worker population of 74,750,000 for 1983, an estimated 1,070,000 to 1,650,000 dermatologic injuries may occur yearly, with an estimated annual rate of skin injury of 1.4 to 2.2 per 100 full-time workers. The highest percentage of skin injuries are due to lacerations/punctures (82%), followed by burns (chemical and other) (14%)(Table 2).

\* Reprinted from: CDC. MMWR 1986;35:561-3.

\*\* The BLS Annual Survey provides yearly national estimates of incidence rates of occupational illness based on a randomly selected national sample of private-sector US businesses from all industrial classifications. The survey records all new illnesses recognized during the reporting year (incidence) but does not measure continuing conditions from previous years (prevalence).

† Since 1978, the Annual Survey has not tabulated lost workday statistics separately by type of occupational illness.

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**Other Dermatologic Conditions**

Other dermatologic conditions ("illnesses of the skin") may also result from exposure to environmental factors or toxic agents associated with employment. However, they usually result from more sustained or cumulative exposures and involve longer intervals between exposure and occurrence of disease. These conditions include contact dermatitis, infection, acne, and skin cancer. Workers' compensation claims data from California suggest that 95% of these occupational skin conditions are either contact dermatitis (90%) or infections (5%). Field investigations in the 1950s showed that at least 80% of occupational contact dermatitis cases may be caused by the irritating direct cytotoxic effects of causal agents rather than immunologically mediated allergic reactions.

The highest number of other occupational skin conditions (23,017) in 1984 occurred in the manufacturing sector; the highest incidence rate (28.5/10,000 full-time workers) involved the combined agriculture/forestry/fishing division (Table 3).

The clinical course for occupational contact dermatitis is relatively poor. In three studies, complete resolution occurred in 25% of workers affected; 50% improved but had periodic recurrences; and 25% developed persistent dermatitis as severe as or worse than the original condition. Contact dermatitis often necessitates job changes or modifications. Despite these, however, complete resolution may occur in only a limited proportion of cases.

**Prevention of Work-related Dermatologic Disorders**

The most effective prevention measures are engineering controls that eliminate exposures of the skin to chemical, physical, or mechanical agents through isolation, containment, or redesign of industrial processes. Substitution of less toxic substances through chemical engineering may also be effective. Protective clothing should be selected on the basis of resistance to both chemical and physical hazards, as well as on the relative permeabilities to specific chemical exposures. Effective cleaning of skin and clothing is important, but workers should not wash vigorously or excessively with harsh soaps and detergents. Barrier creams have been suggested as alternatives, although their effectiveness has not yet been established. Prevention strategies should always include education of workers and management.

Expanded activities concerning occupational dermatologic conditions include improved methods for surveillance of occupational skin disease and vigorous research in dermatotoxicology to identify preventable risk factors and facilitate effective interventions at early stages.

**REFERENCES:**

1. TDH. Leading work-related diseases and injuries--United States. PDN, Vol. 46, No. 29, July 19, 1986.
2. TDH. Leading work-related diseases and injuries--United States. PDN, Vol. 46, No. 51, December 20, 1986.

**Table 1.**  
**Selected examples of occupational dermatologic conditions**

Skin disorders	Affected skin structures
Contact dermatitis	Epidermis
Infection	Epidermis and dermis
Trauma	Connective tissue
Cancer	Squamous and basal cells, melanocytes
Vitiligo	Melanocytes
Urticaria	Blood vessels and mast cells
Chloracne	Sebaceous glands

Tables 2 and 3 are on page 4.

MONTHLY SUMMARY OF REPORTABLE DISEASES IN TEXAS  
 Dates of Onset: November 30 to December 31, 1986

REPORTABLE DISEASE	PHR 1	PHR 2	PHR 3/12	PHR 4	PHR 5	PHR 6	PHR 7/10	PHR 8	PHR 9	PHR 11	WEEKS 49 - 53	WEEKS 49 - 53	CUMULATIVE	CUMULATIVE
											1985	1986	1985	1986
AIDS					5	2	2	2		1	33	12	483	712
Amebiasis			1					4	1		12	6	279	392
Botulism											0	0	4	5
Brucellosis											2	0	47	12
Campylobacteriosis			1		6	1	2		5	12	38	27	666	757
Coccidioidomycosis											0	0	21	42
Dengue											0	0	0	15
Encephalitis					1	1					11	2	142	158
Hansen's Disease											0	0	28	29
Hepatitis A	2	4	26	4	32	5	2	5	7	1	176	83	2,565	2,069
Hepatitis B	1		5	2	23	2	2	2	3	5	117	45	1,513	1,412
Hepatitis D											0	0	0	0
Hepatitis, NA-NB			1		1				1	1	16	4	178	197
Hepatitis, U		1	4	1	26		2		4	2	60	42	1,290	838
Histoplasmosis						1					1	1	44	49
Legionellosis											1	0	29	33
Leptospirosis											0	0	6	6
Listeriosis					2	1		1			0	4	0	21
Lyme Disease											0	0	0	2
Malaria	1										1	1	91	80
Measles											2	0	450	397
Meningococcal Infections				1	2	2	1		2	3	21	11	132	137
Meningitis, Aseptic				1	8	1	1	1		6	41	18	989	1,173
Meningitis, H. influenzae	4	2	1	1	13	5	4	1	1	16	48	48	554	482
Mumps		2			2	1		1	2	1	10	9	321	232
Pertussis											10	0	379	89
Psittacosis											0	0	1	2
Relapsing Fever											0	0	0	1
Reye Syndrome											1	0	13	6
RMSF											2	0	33	19
Rubella											2	0	52	72
Salmonellosis	1	3	6	1	18	11	5	3	7	11	148	66	2,442	2,349
Shigellosis	11	4	6	4	13	11	3	4	6	11	97	73	1,718	2,396
Tetanus											0	0	9	10
Toxic Shock Syndrome											4	0	27	18
Trichinosis											0	0	3	2
Tularemia											0	0	8	5
Typhoid											1	0	32	29
Typhus, Endemic											2	0	25	34
Vibrio infections											0	0	0	9
Chickenpox	5		139	16	160	13	28	94	41	238	1,790	734	20,758	22,857
Influenza	263		404	141	474	188	864	1,490	149	641	10,452	4,614	96,164	76,275

NOTE: There have been no reported cases of: Anthrax, Cholera, Diphtheria, Plague, Polio, Q Fever, Rabies, or Yellow Fever in 1986.

MONTHLY SUMMARY OF REPORTABLE OCCUPATIONAL DISEASES IN TEXAS  
 NOVEMBER 30 TO DECEMBER 31, 1986

REGION	1	2	3/12	4	5	6	7/10	8	9	11	WEEKS 49-52	WEEKS 49-52	CUMULATIVE	CUMULATIVE	
											1985	1986	1985*	1986	
ELEVATED BLOOD LEAD LEVELS †					2							47	2	223	554
ACUTE OCCUPATIONAL PESTICIDE POISONING §															
SILICOSIS §															
ASBESTOSIS §															

\* The Occupational Disease Reporting Act went into effect on October 15, 1985.

† Blood lead level  $\geq 40$  ug/dl in persons 15 years of age or older; summarized by date of blood lead test.

§ Regular summaries of these reportable occupational diseases will be included as reporting procedures become better established.

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CUMULATIVE TOTALS FOR DISEASES REPORTED TO THE BUREAU OF COMMUNICABLE  
 DISEASE SERVICES THROUGH DECEMBER 1986

REGION	1	2	3/12	4	5	6	7/10	8	9	11	STATEWIDE	STATEWIDE
											1985	1986
TUBERCULOSIS	14	16	100	21	393	104	129	221	147	643	1750	1788
P&S SYPHILIS	43	104	170	41	1540	273	300	118	309	1069	4610	3967
GONORRHEA	1278	1268	3328	1623	20739	6098	5399	1729	4187	17727	66728	63376

**Table 2.**  
**Occupational dermatologic injuries\* -- United States, 1983**

Type of injury	No.	(%)
Lacerations and punctures	253,141	(82.3)
Burns (nonchemical)	36,477	(11.9)
Abrasions	10,576	(3.4)
Burns (chemical)	6,828	(2.2)
Cold injuries	566	(0.2)
Radiation injuries	135	(0.04)
<b>Total</b>	<b>307,723</b>	<b>(100.0)</b>

\*Reported by the Supplementary Data System of the Bureau of Labor Statistics from 29 participating states.

**Table 3.**  
**Cases and incidence rate of occupational dermatologic conditions, in a segment of workers, by major industrial divisions -- United States, 1984\***

Industrial division	No.	Incidence rate <sup>†</sup>
Agriculture/forestry/fishing	2,233	28.5
Manufacturing	23,017	12.3
Construction	2,456	6.6
Services	7,973	5.0
Transportation/utilities	2,114	4.3
Mining	393	4.0
Wholesale/retail trade	3,770	2.1
Finance/insurance/real estate	563	1.1

\*Bureau of Labor Statistics Annual Survey.

<sup>†</sup>Per 10,000 full-time workers (2,000 employment hours/full-time worker/year).

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