1997-98 SESSION COMMITTEE HEARING RECORDS

Committee Name:

Joint Survey Committee on Retirement Systems (JSC-RS)

Sample:

- Record of Comm. Proceedings
- 97hrAC-EdR_RCP_pt01a
- 97hrAC-EdR_RCP_pt01b
- 97hrAC-EdR_RCP_pt02

- *Appointments ... Appt*
- *Clearinghouse Rules ... CRule*
- *Committee Hearings ... CH*
- *Committee Reports ... CR*
- *Executive Sessions ... ES*
- *Hearing Records ... HR*
- *Miscellaneous ... Misc*
  - *97hr_JSC-RS_Misc_pt11f*
- *Record of Comm. Proceedings ... RCP*

Hearing 2-9-98

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12 citations found

Other Formats: Citation | MEDLINE
Links: Related Articles

Br J Ind Med 1990 Jul;47(7):462-465

Respiratory mortality among firefighters.

Rosenstock L, Demers P, Heyer NJ, Barnhart S

Occupational Medicine Program, University of Washington, Seattle.

Although firefighters have been shown in some studies to suffer chronic respiratory morbidity from their occupational exposures, an increased risk for dying from non-malignant respiratory diseases has not been documented in any previous retrospective cohort mortality study. In order to assess the possibility that an unusually strong "healthy worker effect" among firefighters might mask this increased risk, a mortality analysis of firefighters was carried out in three cities in relation to the United States population and also to a comparison cohort of police officers. The firefighters were employed between 1945 and 1980 and experienced 886 deaths by 1 January 1984; compared with the United States population they had a significantly reduced risk of dying from all causes (SMR = 82, 95% confidence interval, 77-87), and from non-malignant circulatory diseases (SMR = 81, 95% confidence interval 73-89), but no significant difference in risk of non-malignant respiratory diseases (SMR = 88, 95% confidence interval 66-117). Compared with police, the firefighters experienced a trend toward improved mortality outcomes for all causes investigated (SMR = 82), but they had an excess of deaths from non-malignant respiratory diseases (SMR = 141). The results indicate that firefighters are probably at increased risk for dying from non-malignant respiratory diseases; this increased risk may have been missed in previous studies because of the limitations of using a general reference population.

Other Formats: Citation | MEDLINE
Links: Related Articles

(Footnote 7)

Br J Ind Med 1992 Sep;49(9):664-670

Mortality among firefighters from three northwestern United States cities.

Demers PA, Heyer NJ, Rosenstock L

Department of Environmental Health, University of Washington, Seattle.

To explore whether exposure among firefighters to fire smoke could lead to an increased risk of cancer, lung disease, and heart disease, the mortality of 4546 firefighters who were employed by the cities of Seattle and Tacoma, WA and Portland, OR for at least one year between 1944 and 1979 were compared

with United States national mortalities and with mortality of police officers from the same cities. Between 1945 and 1989, 1169 deaths occurred in the study population and 1162 death certificates (99%) were collected. Mortality due to all causes, ischaemic heart disease, and most other non-malignant diseases was less than expected based upon United States rates for white men. There was no excess risk of overall mortality from cancer but excesses of brain tumours (standardised mortality ratio (SMR) = 2.09, 95% confidence interval (95% CI) 1.3-3.2) and lymphatic and haematopoietic cancers (SMR = 1.31, 95% CI = 0.9-1.8) were found. Younger firefighters (< 40 years of age) appeared to have an excess risk of cancer (SMR = 1.45, 95% CI 0.8-2.39), primarily due to brain cancer (SMR = 3.75, 95% CI 1.2-8.7). The risk of lymphatic and haematopoietic cancers was greatest for men with at least 30 years of exposed employment (SMR = 2.05, 95% CI 1.1-3.6), especially for leukaemia (SMR = 2.60, 95% CI 1.0-5.4).

(Footnote 8)

Br J Ind Med 1978 May;**35(2)**:104-108

Mortality among Boston firefighters, 1915--1975.

Musk AW, Monson RR, Peters JM, Peters RK

Although the nature of firefighting involves particular health hazards, previous mortality and morbidity studies of firemen have produced inconsistent evidence for an increased risk of mortality from cardiovascular disease, respiratory disease, cancer and accidents. Mortality experience since 1915 has been examined in 5655 Boston firefighters, comprising all male members of the city fire department with three or more years of service. The observed cause of death as stated on the death certificates of 2470 deceased firefighters has been compared with the numbers expected based on rates for the male population of Massachusetts and of the United States of America. Among all firefighters, deaths from all causes were 91% of expected. The standardised mortality ratio (SMR) was markedly reduced (less than 50) for infectious disease, diabetes, rheumatic heart disease, chronic nephritis, blood diseases and suicide. The SMR was 86 for cardiovascular deaths, 83 for neoplastic deaths, and 93 for respiratory deaths. The SMR for accidents was 135 for active firefighters. The results suggest that the survival experience of firefighters is strongly influenced by strict entry selection procedures, ethnic derivation, and sociocultural attributes of membership. While excessive morbidity has been demonstrated in firefighters, there does not appear to be a strong association between occupation and cause-specific mortality.

(Footnote 9)

Br J Ind Med 1990 Dec;**47(12)**:805-809

A cohort study on the mortality of firefighters.

Hansen ES

Institute of Community Health, University of Odense, Denmark.

This study was set up to investigate the effect of exposure to combustion effluents on the chronic health of firefighters. A cohort of firefighters was followed up through 10 years with regard to cause specific mortality. Comparisons were made with another cohort of civil servants and salaried employees in physically demanding jobs. After a latency of five years, an excess mortality from cancer was seen for persons aged 30 to 74 (standardised mortality ratio (SMR) 173, 95% confidence interval (95% CI) 104-270). A significant increase in lung cancer was seen in the group aged 60 to 74 (SMR 317, 95% CI 117-691), whereas non-pulmonary cancer was significantly increased in the group aged 30 to 49 (SMR 575, 95% CI 187-1341). It is concluded that inhalation of carcinogenic and toxic compounds during firefighting may constitute an occupational cancer risk. An extended use of respiratory protective equipment is advocated.

Other Formats: Citation | MEDLINE
Links: Related Articles

(Footnote 10)

Am J Ind Med 1987;**11(6)**:671-684

Mortality of a municipal-worker cohort: IV. Fire fighters.

Vena JE, Fiedler RC

Morbidity and mortality studies of fire fighters have produced varied and inconsistent findings regarding the potential chronic effects of fire fighting including respiratory disease, cardiovascular disease, and cancer. The mortality experience of 1,867 white male fire fighters who were employed for the City of Buffalo a minimum of five years with at least one year as a fire fighter was studied. Vital status was determined for 99% of the cohort, resulting in 470 observed deaths. The fire fighter cohort was characteristic of a healthy worker population. All-cause mortality was close to the expected standardized mortality ratio (SMR) = 95, and significantly lower than expected mortality was seen for all external causes (SMR = 67)--in particular, for suicide (SMR = 21) and respiratory diseases (SMR = 48). Significantly elevated SMRs were found for benign neoplasms (SMR = 417), cancer of the colon (SMR = 183), and cancer of the bladder (SMR = 286). Cause-specific mortality is presented by number of years employed, calendar year of death, year of hire, and latency. Cancer mortality was significantly higher in the long-term fire fighters, and risk of mortality from all malignant neoplasms tended to increase with increasing latency. Patterns in risk of mortality among fire fighters for cancers of the bladder, colon, and brain are intriguing. Additional follow-up of this cohort and initiation of cancer morbidity studies would be helpful in further clarifying the potential long-term effects of fire fighting on cancer risk.

Other Formats: Citation | MEDLINE
Links: Related Articles

(Footnote 11)

Am J Ind Med 1986;**9(6)**:517-527

Mortality in police and firefighters in New Jersey.

Feuer E, Rosenman K

A proportionate mortality study of police and firefighters in New Jersey was conducted using the records

of a comprehensive retirement system. Three reference populations were used: U.S. general population, New Jersey general population, and police as a reference group for the firefighters. Overall neither group differed from the New Jersey male population in the cause of death. Analyses by latency showed an increase in skin cancer and cirrhosis in firefighters and cirrhosis in police. With increased time from first employment, an inverse association was found between heart disease and time of first exposure. This was reflected in statistically significant increased proportionate mortality rates (PMR) for arteriosclerotic heart disease (ASHD) (ICD 410-414) for both working police (PMR = 1.15) and firefighters (PMR = 1.2). Retired police and firefighters had PMRs of 0.96 and 0.98, respectively. Firefighters had a significant increase in nonmalignant respiratory disease (PMR = 1.98) and leukemia (PMR = 2.76) when the police were used as a reference group. Potential causes of the above findings are discussed.

(Footnote 12)

Eur J Epidemiol 1995 Dec;**11(6)**:643-646

Mortality amongst Paris fire-fighters.

Deschamps S, Momas I, Festy B

Laboratoire d'Hygiene et de Sante Publique, Faculte des Sciences Pharmaceutiques et Biologiques, Paris, France.

This paper is the first mortality cohort study undertaken in France to examine the association between fire-fighting and cause of death. The cohort investigated in this study consisted of 830 male members of the Brigade des sapeurs-pompiers de Paris (BSPP). These professional had served for a minimum of 5 years on 1 January 1977. They were monitored for a 14 year period, finishing 1 January 1991. When compared to the average French male, the Paris fire-fighters were found to have a far lower overall mortality (SMR = 0.52 [0.35-0.75]). None of the cause specific SMRs were significantly different from unity. However a greater number of deaths than expected was observed for genito-urinary cancer (SMR = 3.29), digestive cancer (SMR = 1.14), respiratory cancer (SMR = 1.12) and 'cerebrovascular disease' (SMR = 1.16). The low overall SMR observed was consistent with the healthy worker effect. As for cause specific SMRs, they will be confirmed or invalidated by a further analysis as the follow-up of this cohort is being carried on.

Epidemiology 1991 Jan;**2(1)**:49-59

A comparison of PMRs and SMRs as estimators of occupational mortality.

Park RM, Maizlish NA, Punnett L, Moure-Eraso R, Silverstein MA

Health and Safety Department, United Auto Workers International Union, Detroit, MI 48214.

Standardized mortality ratios (SMRs) for occupational diseases are confounded by health differences between industrial and general populations. In 109 industrial cohorts largely free of work-related mortality, these selection effects were sizable for both malignant and nonmalignant outcomes. All-cancer SMRs were considerably less than 1.0 for many cohorts, and lung cancer was subject to almost as much selection-derived confounding as nonmalignant disease. Standardized proportional mortality ratios (PMRs) (approximated by relative SMRs (RSMRs] were less confounded than SMRs in estimating occupational risk. PMRs appeared to overestimate cancer mortality on average by 6%, while SMRs underestimated by 13%. PMRs underestimated nonmalignant respiratory disease by 16 percent but SMRs underestimated by 39 percent. The sources of confounding, in addition to selection on health status at hire, most likely include social class. SMRs, in the absence of internal population comparisons, would fail to detect both malignant and nonmalignant work-related mortality in many industrial cohorts.

Other Formats: Citation | MEDLINE
Links: Related Articles

(Footnote 13)

Br J Ind Med 1984 May;**41(2)**:183-187

Mortality of fire fighters in Western Australia.

Eliopulos E, Armstrong BK, Spickett JT, Heyworth F

All except 17 (1.7%) of 990 fire fighters employed by the Western Australian Fire Brigade between 1 October 1939 and 31 December 1978 were successfully followed up to 31 December 1978. Mortality from all causes was less than expected (SMR 0.80 with 95% confidence interval 0.67 to 0.96). There was evidence of the healthy worker effect but none that mortality increased with increasing duration of employment. A small proportional excess of deaths from road traffic accidents (SPMR 1.66) appeared to be unrelated to fire service. Deaths from other accidents, poisonings, and violence were significantly less than expected (SMR 0.35 with 95% confidence interval 0.10 to 0.90) and may indicate an effect of training and experience on accident proneness. There was no evidence of increased mortality from cardiovascular or respiratory disease, or from any other cause.

Other Formats: Citation | MEDLINE
Links: Related Articles

J Occup Med 1976 Mar;**18(3)**:165-168

Standardized mortality ratios and the "healthy worker effect": Scratching beneath the surface.

McMichael AJ

The age-standardized mortality ratio (SMR) is a relative index of mortality, expressing the mortality experience of the study population relative to that of a comparison ("standard") population. With the

general population as the "standard", the SMR for an occupational population will underestimate the mortality experience of that latter population (since it comprises individuals necessarily healthy enough to be employable --and whose mortality risk is therefore initially lower than the general population average). However, this "healthy worker effect" does not equally to all groups within the study population. Therefore, if one attempts to adjust for this effect, the summary nature of the SMR must be recognized, and allowance must be made for variation in the healthy worker effect between different age groups, different races, different work-status groups, different causes of death, and different elapsed-time periods of observation.

(Footnote 14)

Cancer Causes Control 1994 Mar;5(2):129-135

Cancer incidence among firefighters in Seattle and Tacoma, Washington (United States).

Demers PA, Checkoway H, Vaughan TL, Weiss NS, Heyer NJ, Rosenstock L

School of Public Health and Community Medicine, University of Washington, Seattle.

In order to determine if exposure to carcinogens in fire smoke increases the risk of cancer, we examined the incidence of cancer in a cohort of 2,447 male firefighters in Seattle and Tacoma, (Washington, USA). The study population was followed for 16 years (1974-89) and the incidence of cancer, ascertained using a population-based tumor registry, was compared with local rates and with the incidence among 1,878 policemen from the same cities. The risk of cancer among firefighters was found to be similar to both the police and the general male population for most common sites. An elevated risk of prostate cancer was observed relative to the general population (standardized incidence ratio [SIR] = 1.4, 95 percent confidence interval [CI] = 1.1-1.7) but was less elevated compared with rates in policemen (incidence density ratio [IDR] = 1.1, CI = 0.7-1.8) and was not related to duration of exposure. The risk of colon cancer, although only slightly elevated relative to the general population (SIR = 1.1, CI = 0.7-1.6) and the police (IDR = 1.3, CI = 0.6-3.0), appeared to increase with duration of employment. Although the relationship between firefighting and colon cancer is consistent with some previous studies, it is based on small numbers and may be due to chance. While this study did not find strong evidence for an excess risk of cancer, the presence of carcinogens in the firefighting environment warrants periodic re-evaluation of cancer incidence in this population and the continued use of protective equipment.

National Library of Medicine: IGM Full Record Screen

(Footnote 15)

Citations 5 to 5 of 5 from MEDLINE 1994-97

TITLE: Mortality and cancer incidence in Stockholm fire fighters.

AUTHOR: Tornling G; Gustavsson P; Hogstedt C

AUTHOR AFFILIATION: Department of Thoracic Medicine, Karolinska Hospital, Stockholm, Sweden.

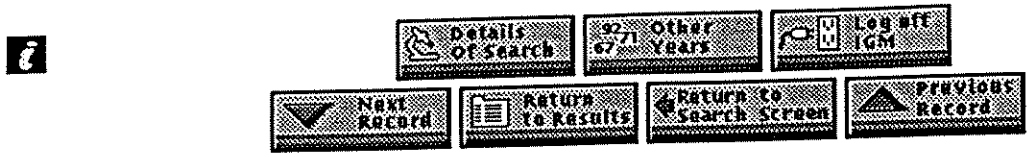
SOURCE: Am J Ind Med 1994 Feb;25(2):219-28

NLM CIT. ID: 94197196

ABSTRACT: Fire fighters are exposed to irritating, asphyxiating, and toxic gases and aerosols, to psychological stress, and to physically demanding work. Due to differences in fire fighting techniques, exposure conditions for fire fighters differ among different countries. The purpose of this investigation was to study cancer incidence and mortality in fire fighters who have been working with fire fighting methods used in Sweden from the beginning of this century onwards. All male fire fighters employed for at least 1 year in the City of Stockholm during 1931-1983 were traced, and an index of the number of fires fought was calculated for each individual. The mortality during 1951-1986 (among 1, 116 fire fighters) was lower than expected (SMR = 82; 95% confidence interval 72-91) compared with local mortality rates, with a low mortality in circulatory diseases, obstructive lung diseases, violent deaths, and suicides. The cancer incidence in 1958-1986 was equal to the expected (SMR = 100; 95% confidence interval 83-119). However, an excess of stomach cancer (18 observed vs. 9.37 expected; SMR = 192, 95% CI 114-304) was observed. There was also a tendency for higher incidence and mortality in stomach and brain cancer with increasing number of fires. There were four deaths from brain cancer compared to 0.8 expected (SMR = 496; 95% CI 135-1270) in the highest exposure category. Fire fighters are, however, not systematically exposed to known stomach or brain carcinogens, and the results need confirmation in further studies with extensive exposure evaluations.

MAIN MESH SUBJECTS:
*Fires/STATISTICS & NUMER DATA
*Mortality
Neoplasms/*EPIDEMIOLOGY/MORTALITY
Occupational Diseases/*EPIDEMIOLOGY/MORTALITY

National Library of Medicine: IGM Full Record Screen



(Footnote 20)

Citations 5 to 7 of 7 from MEDLINE 1994-97

TITLE: Occupational mortality among firefighters: assessing the association.

AUTHOR: Guidotti TL

AUTHOR AFFILIATION: Dept. of Public Health Sciences, University of Alberta Faculty of Medicine, Edmonton, Canada.

SOURCE: J Occup Environ Med 1995 Dec;37(12):1348-56

NLM CIT. ID: 96360357

ABSTRACT: Because of their occupational exposure to a variety of toxic agents, fire fighters may be at risk for a number of exposure-related diseases. We reviewed the current literature on disease risk among fire fighters to compare findings and to infer magnitude of risk. A standard mortality ratio (SMR) of 200 is equal to an attributable risk of 100% of expected, sufficient to justify presumption in most workers' compensation systems that accept this. We therefore concentrated on risks that approach or exceed an SMR of 200 or an equivalent risk estimate, bearing in mind that confidence intervals around these estimates are wide. Based on the criteria for presumption of occupational risk, we suggest the following conclusions with respect to general presumption of risk: (1) Lung cancer: There is evidence for an association but not of sufficient magnitude for a general presumption of risk. (2) Cardiovascular. There is no evidence for an increased risk of death overall from heart disease. Sudden death, myocardial infarction, or fatal arrhythmia occurring on or soon after near-maximal stress on the job are likely to be heart related, but such "heart attacks" occurring away from work cannot be presumed to be work related. (3) Aortic aneurysm: The evidence is incomplete for an association, but if an association does exist, it would probably be of a magnitude compatible with a general presumption of risk. (4) Cancers of the genitourinary tract, including kidney, ureter, and bladder: The evidence is strong for both an association and for a general presumption of risk. (5) Cancer of brain: Incomplete evidence strongly suggests a possible association at a magnitude consistent with a general presumption of risk. (6) Cancer of lymphatic and hematopoietic tissue: By group, there is some evidence for both an association and a general presumption or risk. However, the aggregation is medically meaningless. We therefore recommend a case-by-case approach. (7) Cancer of the colon and rectum: There is sufficient evidence to conclude that there is an association but not that there is a general presumption of risk. (8) Acute lung disease: Unusual exposures, such as exposure to the fumes of burning plastics, can cause severe lung toxicity and even permanent disability. This does not appear to result in an increased lifetime risk of dying from chronic lung disease.

MAIN MESH SUBJECTS: *Fires
Occupational Diseases/*MORTALITY
Occupational Exposure/*ADVERSE EFFECTS

1997-98 LRB-1538/3

STATE OF WISCONSIN

APPENDIX TO 1997 SENATE BILL 329

REPORT OF JOINT SURVEY COMMITTEE ON RETIREMENT SYSTEMS

(Introduced by Senators Wirch, Rude, Rosenzweig, Wineke, Chvala, Clausing, Burke, Roessler, C. Potter, Risser, Darling, Decker, George, Jauch, Panzer, Plache, Ellis, Moen, Shibilski, Breske and Farrow; cosponsored by Representatives Klusman, Walker, Musser, Krusick, Kreibich, Porter, Handrick, Schneider, Dobyns, R. Potter, Travis, Green, Ryba, Kreuser, Robson, Duff, Steinbrink, Johnsrud, Kedzie, Ladwig, L. Young, Sykora, Lorge, LaFave, Huebsch, Baumgart, J. Lehman, M. Lehman, Harsdorf, Otte, Boyle, Plale, Gunderson, Kaufert, Seratti, Gronemus, Hasenohrl, Underheim, Staskunas, Lazich, Goetsch, Rutkowski, Ott and Plouff.) An Act to amend 40.25 (2), 40.25 (2m), 61.66 (2), 111.35 (4) and 891.45; and to create 40.25 (2t), 40.65 (7)(ar) and 891.455 of the statutes; relating to presumption concerning employment-connected disease for certain municipal fire fighters.

EXTRACT OF COMMITTEE'S RECOMMENDATION ON THIS BILL

PURPOSE OF THE BILL

Current law presumes that firefighters who develop heart or respiratory disease subsequent to their employment as firefighters, and after five years of service, have developed the disease as a consequence of their employment, and are therefore eligible for disability and death benefits under Wis. Stats. 40.65. S.B. 329 would provide similar presumption of occupational disability and eligibility under Sec. 40.65 to firefighters with 10 years of service who contract cancer of a type other than that already covered under the existing heart and lung provisions of state law. Unlike other Sec. 40.65 disabilities, they would need 10, rather than 5, years of service to be eligible, and they would not be allowed to withdraw the member's accumulated WRS contributions in addition to drawing an annuity under Sec. 40.65.

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ACTUARIAL EFFECT

This bill would have no material actuarial effect on the WRS.

PROBABLE COST

James Searcy, actuary for the Group Insurance Board, has estimated the cost of this bill to be about 0.24% of the payroll for covered firefighters. Estimating that payroll to be $131.7 million in 1999 implies an estimated cost to employers of $316,000 for that year. The cost should remain at about 0.24% of firefighters' payroll for a period of 14 years, and then decrease to about 0.14% of payroll, which will be the equivalent of $190,000 annually measured in current dollars. (This is because the actuary contemplated a 14-year payoff of the initial unfunded liability to the s. 40.65 program that would arise under this legislation.) This cost would be borne by the employers, and there would be no cost to the state.

PUBLIC POLICY

To date, 17 states have adopted cancer presumption laws for firefighters. Of Wisconsin's near neighbors, this includes Minnesota and Illinois.

Research on the exposure of firefighters to carcinogenic agents in the course of their duties has found damaging levels of numerous known and suspected carcinogens present at fires and in firehouses as well. Chief among these are benzene and other aromatic hydrocarbons, asbestos, formaldehyde, chemicals present in diesel exhaust, PCB's, styrene, methylene chloride, and other organic chemicals. One 1995 review of 19 epidemiologic studies of cancer in firefighters concludes that "The data show that employment as a firefighter increases the risk of developing and dying from certain specific cancers: leukemia, nonHodgkins lymphoma, multiple myeloma, and cancers of the brain, urinary bladder, and, possibly, prostate, large intestine, and skin." ("The Risk of Cancer in Firefighters", Occupational Medicine, vol. 10, no. 4, Oct - Dec 1995.)

Face masks and protective clothing are often inadequate protection for a firefighter, as notably in situations where their use interferes with doing the job (e.g., fogged face masks), and they are not used. Many harmful chemicals absorb through the skin as well as by inhalation, so that it may be impossible for a firefighter to avoid receiving harmful doses of carcinogens. In fact, diesel exhaust from firetrucks present in the air at firehouses has been determined to be a major cause of increased cancer risk for firefighters.

Based on those studies surveyed in the research paper already cited, for which statistical significance was found in the data to support the conclusion of increased cancer risk for firefighters, estimates were made for six types of cancer to answer this question: "What percentages of the cancers occurring in the sampled firefighters would not have occurred if they were not firefighters?" Here are the results:

Type of Cancer	Percentage of Cancers Estimated To Be Due to Additional Occupational Risk of Cancer
Brain cancer	54%
Leukemia	68%
Bladder cancer	54%
Prostate cancer	62%
Rectal cancer	36%
Skin cancer	59%

Under present Wisconsin law, a firefighter contracting cancer is not presumed to be occupationally disabled, so will typically continue to work until he/she is no longer able to, and then take disability retirement under Sec. 40.63 (nonoccupational disability). Social Security disability benefits are, of course, not available to firefighters in our state.

During the past 20 years, 26 Wisconsin firefighters with at least 10 years of service have developed cancer of a type covered under this bill (e.g., not lung cancer). Of these 26, only 16 were under age 53 and thus would have been eligible for disability benefits if S.B. 329 had then been law. Their average age when leaving service was 47 years, and their average length of service was 21 years. Ten of the 16 died within one year of leaving their jobs.

In light of this, the following table of six hypothetical cases seems fairly illustrative of the benefits now available to Wisconsin firefighters under Sec. 40.63 of statute. For each of these six firefighters it is assumed that.....

- Termination from service occurs in 1999.
- Final average earnings at termination from service is $45,000, and salary history has been typical.
- The firefighter is male, with a wife 4 years younger.

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- The firefighter elects a 100% Joint and Survivor annuity (with no certain period) to give his wife the largest possible widow's pension.
- Death occurs one year after the disability annuity commences.

Note that $45,000 is close to the actual average salary for the 2,600 firefighters now in WRS. To consider salary levels other than $45,000, simply scale the annuity amounts shown here in proportion to a salary of $45,000.

Illustrative s. 40.63 Annuities to Firefighters with Cancer
(Final Average Earnings = $45,000 in each case.)

Age Hired	Age Disabled	Credited Service	Annual Annuity Paid First Year	Annual Annuity Paid To Surviving Wife**
24	29	5*	$33,555	$ 1,589
24	39	15	32,961	5,735
24	49	25	29,891	20,621
34	39	5*	22,270	1,668
34	44	10	21,448	7,713
34	49	15	20,833	11,477

* Included for comparison only. 5 years of service does not qualify under this bill.
** Includes one year's dividend based on expected (8%) fund rate of return.

Counties –
Support making mandatory subject of bargaining? More likely to look at that.

---

pepper spray?

---

17 states Cancer presumption

Dr Henry Anderson
DH&FS

fire wardens

5
13
8
39
51
44
3
16

9
17
19
198

County Jailors
Employment Category
Summary Survey Results

County	Employment Category		Deputization Required		Required to Carry Firearm for Any Portion of Job		Physical Fitness Requirement	
	General	Protective	Yes	No	Yes	No	Yes	No
Adams	X		X			X	X	
Ashland	X			X		X		X
Barron								
Bayfield	X			X		X		X
Brown		X	X		X		X	
Buffalo	X			X		X		X
Burnett	X			X		X		X
Calumet	X		X		X			X
Chippewa	X			X		X		X
Clark		X	X			X		X
Columbia								
Crawford		X	X		X			X
Dane		X	X		X		X	
Dodge		X	X			X		X
Door		X	X			X	X	
Douglas	X			X		X	X	
Dunn	X			X				
Eau Claire		X	X		X		X	
Florence								
Fond du Lac	X			X		X		X
Forest		X	X		X		X	
Grant	X			X		X	X	
Green		X	X			X	X	
Green Lake		X		X		X	X	
Iowa	X		X			X	X	
Iron	X		X			X		X

County Jailors
Employment Category
Summary Survey Results

County	Employment Category		Deputization Required		Required to Carry Firearm for Any Portion of Job		Physical Fitness Requirement	
	General	Protective	Yes	No	Yes	No	Yes	
Jackson		X	X			X	X	
Jefferson		X	X		X		X	
Juneau		X	X		X			
Kenosha	X			X		X	X	
Kewaunee		X	X		X		X	
LaCrosse	X			X		X	X	
Lafayette		X		X		X		
Langlade								
Lincoln		X	X		X		X	
Manitowoc		X	X		X		X	
Marathon	X			X		X	X	
Marinette		X	X		X			
Marquette		X	X			X	X	
Menominee								
Milwaukee								
Monroe		X	X			X	X	
Oconto	X			X		X		
Oneida	X			X		X		
Outagamie	X		X			X	X	
Ozaukee		X	X			X	X	
Pepin		X	X		X		X	
Pierce		X	X			X		
Polk								
Portage		X	X		X		X	
Price		X	X		X		X	
Racine		X	X		X		X	

Employment Category
Summary Survey Results

County	Employment Category		Deputization Required		Required to Carry Firearm for Any Portion of Job		Physical Fitness Requiremer	
	General	Protective	Yes	No	Yes	No	Yes	No
Richland	X			X		X		X
Rock		X	X		X			X
Rusk	X		X		X			X
St. Croix	X		X			X	X	
Sauk		X	X		X		X	
Sawyer		X	X			X		X
Shawano								
Sheboygan	X			X		X	X	
Taylor		X	X			X		X
Trempealeau	X			X		X	X	
Vernon		X	X		X			X
Vilas	X			X		X		X
Walworth	X			X		X		X
Washburn								
Washington	X		X			X		X
Waukesha	X			X		X		X
Waupaca	X			X		X	X	
Waushara		X	X			X	X	
Winnebago		X	X			X	X	
Wood		X	X		X			X

IAFF OCCUPATIONAL PRESUMPTIVE CANCER LEGISLATION TESTIMONY

OCCUPATIONAL HEALTH AND SAFETY DEPARTMENT
INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS, AFL-CIO-CLC

Good Afternoon, I am Dr. John Norton. I am an Occupational Medicine Fellow at Johns Hopkins University, Baltimore, Maryland currently rotating through the International Association of Fire Fighters in completion of my practicum year for board certification in occupational medicine. I am also currently employed full time as an emergency room physician at Calvert Memorial Hospital in Calvert County, Maryland. I received my MPH degree at the Medical College of Wisconsin in April of 1988.

On behalf of the International Association of Fire Fighters, I am here today to discuss the relationship between cancer and fire fighting and the need for passage of legislation which addresses the inordinate cancer experience of fire fighters.

Prior to doing this, I believe it is important for you to understand what our organization is and who we represent at these hearings.

The IAFF is an international union affiliated with the AFL-CIO and the Canadian Labour Congress. At the present time, we represent over 225,000 paid professional fire service employees in the United States and Canada. The membership of the IAFF is employed by various parties which include: the federal government, states, counties, municipalities, fire districts, airports, industrial manufacturers, and so on.

The IAFF has been actively involved in the health and safety problems of fire fighters for more than twenty years. Each year we conduct an annual death and injury survey with the cooperation and participation of various fire department administrators. This survey has shown that fire fighting is the most hazardous occupation in the United States.

During the ten year period, 1986-1995, the D & I survey has found that professional fire fighters experienced 352 line-of-duty deaths, 611 occupational disease deaths, 337,622 injuries and 7,467 forced retirements due to occupationally induced diseases or injuries. Fire fighter line-of-duty fatalities have ranked fire fighting among other publicized hazardous occupations in the private sector, such as mining and construction.

Of the injuries reported, approximately 80 per cent occur while at the emergency scene. Sprains and strains are the leading cause of on-duty injury followed by lacerations and contusions, burns, inhalation of hazardous materials, and eye injuries. The data showed that more 40% of all fire fighters can be expected to be injured at least once during the course of the year. Occupational diseases such as heart disease and cancer constitute more than 90 per cent of all reported fire fighter deaths when their occurrences are combined.

To truly understand what these statistics mean and why they exist, I would like to take the next few moments to examine the nature of fire fighting. Fire fighters are constantly making transitions from the calm, peaceful environment of the firehouse to the hostility presented by fire. These constant transformations from quiet to raging infernos have numerous psychological and physiological side-effects. Within 15-30 seconds after the fire alarm sounds, research studies have found that a fire fighter's heart rate can increase by as much as 117 beats per minute. In addition, a fire fighter's heart can beat at twice its normal rate throughout the entire fire fighting operation. These extreme physiological stresses obviously lead to severe coronary problems, which have been documented by numerous authorities.

The working environment can also mean a transition from below freezing temperatures to temperatures between 100 degrees and 500 degrees Fahrenheit at the fire itself. These temperature extremes can lead to frostbite along with numerous cardiovascular and pulmonary disorders such as acute circulatory collapse, hypertension, pneumonia, and bronchitis.

Fire fighting involves strenuous physical activity that is made more burdensome by the fact that the protective clothing and breathing apparatus a fire fighter wears adds 45 to 65 pounds. Nevertheless, the fire fighter performs such vital activities as carrying heavy hose up flights of stairs, fighting water pressure to keep the hose pointed at the flames, climbing onto rooftops carrying axes to ventilate the burning structure and so forth.

This afternoon, I wish to specifically address that are pertinent to the need to enact legislation to clearly indicate that cancer is occupationally related to fire fighting. I will address:

The phases of fire fighting;
Fire fighter exposure studies;
Prevalent fire fighter cancers and associations with such exposures; and
Conclusions regarding the need for this legislation.

Phases of Fire Fighting

- Not just fire suppression but:
  - Knockdown (refers to active firefighting): in which respirators and other personal protective equipment (PPE) are not 100% effective in preventing exposure, especially of substances that can enter the body through respiration;
  - Overhaul: which occurs after a fire has been put out and existing structures are destroyed and for safety purposes and to attempt to determine the cause of the fire. It is important to note that respirators are commonly not used during this phase, and the likelihood of repairable carcinogen in soot, as well as other carcinogens such as asbestos being dislodged and inspired exists.
  - Clean-up after a fire in which carcinogens in soot/residue on PPE may be absorbed, particularly through hydrated skin
  - Diesel exhaust in firehouses, where fire fighters spend long hours, is also an established carcinogen. Diesel exhaust from fire trucks, particularly if engines are run in closed houses without direct venting to outside air, may lead to high levels of diesel exhaust emission particulates that are]likely carcinogenic.

Exposure Studies

- Firefighters are routinely exposed to complex and dynamic mixtures of chemical substances that are contained in fire smoke and building debris. Despite the large numbers of people employed in *this* occupation, the nature of these exposures *is not well defined. Nevertheless, I* will next outline numerous studies to date that demonstrate that fire fighters are routinely exposed to carcinogens:

Benzene

Benzene is firmly established as a human carcinogen. Numerous studies have shown that benzene is a common airborne contaminant in fire smoke and occurs in concentrations that are considered deleterious in the context of chronic exposures.

In Boston, Treitman, Burgess, and Gold studies ambient environmental levels of a number of air contaminants, including benzene, at more than 200 structural fires. Benzene was detected in 181 of 197 (92%) samples taken at fire scenes by air sampling units placed on the chests of fire fighters. Half of the samples showed benzene over 1 part per million (ppm), the current Occupational Safety and Health Administration (OSHA) permissible exposure level. Approximately 5% of the samples were above 10 ppm benzene.

In Dallas, Lowry and colleagues studied fire fighters' exposure to benzene at nearly 100 structural fires. They found benzene at the majority of the fires but did not provide information about the levels measured. They also detected the presence of at least 70 organic chemical species regardless of whether synthetic materials were a major part of the materials burned.

In Buffalo, Brandt-Rauf et al. used personal portable sampling devices to measure exposures of 51 fire fighters at 14 fires. The tubes of the sampling devices were attached to the fire fighters' turnout gear, thereby representing ambient air outside the mask. Benzene was second only to carbon monoxide as the most common chemical substance detected at the fires. It was detected in 18 of 26 samples from twelve of 14 fires. When detectable, the concentration of benzene ranged from 8.3 to 250 ppm. In only one sample where benzene was detected was its concentration below 10 ppm. Even when the smoke's intensity was rated as low, benzene was usually present in concentrations ranging from 22 to 54 ppm. The authors noted that respiratory protection was only partially used or not used at all at the fires judged to be of low smoke intensity.

Jankovic and colleagues at the National Institute for Occupational Safety and Health (NIOSH) (NIOSH is the technical and research institute for OSHA) studied benzene and other exposures at 22 fires, including 6 training fires, 15 residential fires, and 1 automobile fire. Samples were collected via probes placed inside and outside the masks of working fire fighters. In addition, industrial hygienists used a variety of sampling devices at the fire scene. Samples were taken separately during the two phases of a fire: knockdown and overhaul.

Half of the samples taken during the knockdown phase of the fire showed benzene in concentrations of 1-22 ppm. Of the 29 organic substances analyzed qualitatively by gas chromatography/mass spectrometry, benzene was the most common compound detected and was the only substance present in all eight samples.

To measure the efficacy of respiratory protection, samples for benzene were taken inside and outside the mask. Surprisingly, the levels of benzene inside the mask were as high as those taken outside the mask and ranged from nondetectable to 21 ppm. The authors attributed this equivalence in benzene concentrations inside and outside the mask to partial nonuse of the mask at the fire, especially after the initial phase of fire knockdown. They further suggested that benzene may be present only during the latter part of knockdown.

During the overhaul phase of the fire, when respiratory protection is frequently removed, benzene was found.

Asbestos

Asbestos is universally recognized as a human carcinogen and has caused an excess in risk of a variety of cancers in numerous occupations. Since the building destruction caused by fires and the building demolition actively performed by fire fighters during overhaul are likely to dislodge respirable asbestos fibers, the likelihood that fire fighters have exposure to asbestos is high.

In New York City, Markowitz and colleagues formed a study of 212 fire fighters who had begun employment in the New York City Fire Department at least 25 years previously. Twenty of the 152 (13%) fire fighters without prior exposure to asbestos had pleural thickening and/or parenchymal opacities on chest x-ray that represented characteristic sequelae of prior asbestos exposure.

The finding of excess risk of lung and pleural fibrosis due to asbestos among fire fighters indicated that significant asbestos exposure has occurred in this group. Since significant asbestos exposure confers excess risk for selected cancers, it is reasonable to expect that fire fighters have an increased risk of various cancers as a result of their exposure to asbestos.

Polycyclic Aromatic Hydrocarbons

Polycyclic aromatic hydrocarbons (PAHs) are a class of organic substances that have been implicated as the carcinogenic substances in coal tar pitches, coal tar, and selected mineral oils. They have been associated with excess risk of a variety of cancers, including cancer of the skin, lung, kidney, and bladder.

Given the combustion of diverse materials at fires, it is likely that fire fighters would be exposed to significant levels of PAHs. In their recent study, Jankovic et al. evaluated the presence of PAHs at the scene of fires. All 14 PAHs measured, including benz(s)pyrene, were present at mean values of 3-63 micrograms/cubic meter during the knockdown phase of the fire.

Formaldehyde

Formaldehyde has been measured at the fire scene by Lowry et al., Brandt-Rauf and colleagues, and Jankovic et al. reported combined formaldehyde and acetaldehyde levels, with a mean of 5 ppm and a range of 1 to 15 ppm. Brandt-Rauf and colleagues found aldehydes, including formaldehyde, at 4 of 14 fires at concentrations of 0.1 to 8.3 ppm. Jankovic et al. detected formaldehyde at levels up to 8 ppm during knockdown and only 0.4 ppm during overhaul. They also reported that airborne concentrations of formaldehyde inside the mask ranged from nondetectable to 0.3 ppm.

Other Agents

Since the beginning of World War II, the production of synthetic chemicals has increased 350-fold in the United States. With the addition of thousands of synthetic chemicals annually, it becomes impossible to study the carcinogenic properties of each every one of them. Furthermore, the latency period (the time from exposure to disease manifestation) for many cancers is many years, and, therefore, adverse health effects (including cancer) are often not identified for decades.

Prevalent Cancers in Firefighters and Associations with Carcinogenic Occupational Exposures

- The result of 19 epidemiological studies in the medical literature show that employment as a fire fighter increases the risk of developing and dying from certain specific cancers.

Brain Cancer (refer to figure 1)

With reference to figure 1, the vertical axis represent the name of the study (and year). The horizontal axis represents risk. A risk of 100 means that there is no difference between the fire fighter and the comparison group (e.g., general population or police officer); a risk of greater than 100 means that an increased risk (e.g., 150 means 1.5 times greater); and a risk of less than 100 suggests a decreased risk for the fire fighter. It is important to look at the majority of the studies as indicating a trend in order to properly interpret these diagrams. Chemical exposures that are suspected causes of brain tumors include vinyl chloride, benzene, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), N-nitroso compounds, triazenes and hydrazines. Recent epidemiologic studies consistently have found that brain cancer is strongly associated with firefighting, as shown in Brain Cancer figure 1. Generally, excess risk was most notable within 15-30 years of exposure, i.e., after a relatively short latency.

Most notably, Tornling et al. were unique in finding dose response relationships between brain cancer incidence and increasing age, duration of employment, and years since hire, and between brain cancer mortality and increasing age, duration of employment, and estimated number of fires fought.

Most brain cancers are incurable.

Cancers of Blood and Lymphatic Systems

Leukemia and lymphoma are associated with environmental and occupational exposure to benzene and 1,3 butadiene. The prevalence of benzene as a solvent, as a component of gasoline, and as a combustion product that forms during the burning of plastics and synthetics, and of 1,3 butadiene, a monomer found in tires and synthetic rubber products, guarantees that fire fighters will be exposed to gases released by these materials as they burn.

- Leukemia

As seen in the Leukemia figure 2, the majority of epidemiologic studies have found that fire fighters are at increased risk of leukemia.

For example, Feuer and Rosenman reported a statistically significant increased risk of 2.7 times for fire fighters compared to police officers in New Jersey and an almost twofold increase in mortality compared to the general population in New Jersey and in the United States.

Similarly, Sama et al. found that fire fighters had almost three times the risk of police officers when incident cases reported to the Massachusetts Cancer Registry from 1982 to 1986 were examined.

A recent large study from NIOSH combining mortality data from 27 states reported excess risk of 2.8 times for fire fighters younger than 65.

- Non-Hodgkin's Lymphoma (refer to figure 3)

Several studies of fire fighters evaluated this group of malignant diseases. Without exception, marked increases in risk were found.

The study from the Massachusetts Cancer Registry by Sama et al. found a statistically significant risk of 3.3. times for fire fighters relative to police officers.

Studies by Giles et al. from Melbourne, Australia, and Aronson et al. from Toronto, Ontario Canada, reported that fire fighters had twice the risk of non-Hodgkin's lymphoma of males in the general population.

- Multiple Myeloma

Howe and Burch combined the results of all cancer mortality studies of fire fighters available as of 1989 (including four unpublished reports) and concluded that there was a consistent evidence of a causal association between multiple myeloma and firefighting.

Most blood cancers are incurable.

- Bladder Cancer (refer to figure 4)

Occupational chemical exposures known to cause bladder cancer include several aromatic amines, solvents, benzidine, PAHs, coal tars and pitches, soot and oils, substances commonly encountered by fire fighters, particularly at fires in commercial establishments. As seen in Bladder Cancer figure 4, the majority of epidemiologic studies found that firefighting was associated with increased risk of bladder cancer deaths compared to general population rates.

- Kidney Cancer

Occupational exposures that have been implicated as risk factors for renal cell carcinoma include asbestos, PAHs, lead phosphate, dimethyl nitrosamine, coke oven emissions, and gasoline. This list clearly includes agents encountered in firefighting.

- Prostate Cancer (refer to figure 5)

High rates of prostate cancer have been reported among workers with cadmium exposure and in chemists, farmers, loggers, textile workers, painters, and rubber industry workers. The Prostate Cancer chart summarizes the data on fire fighters' risk for prostate cancer. A 30-40% increase in risk was consistently found in the majority of studies.

- Testicular Cancer

A recent report by Aronson et al. found higher than expected mortality for men employed by the Toronto Fire Department during 1950-1989. Over this 40-year period, three testicular cancer deaths occurred in the cohort when only 1.19 were expected based on the Toronto male population of the same age and calendar period. This gives an overall increased risk of 2.5 times for fire fighters. All three deaths occurred in younger men with less than 15 years as fire fighters and within 20 years of first exposure.

- Cancers of the Digestive System

Several established occupational exposures increase the risk of cancer of the digestive system: asbestos, cutting and lubricating oils, dyes, solvents, and metallic compounds. It is hypothesized that, once cleared from the airways, inhaled particles and the carcinogens that adhere to them are transferred to the gastrointestinal tract and swallowed and exert their effect on the digestive epithelium. Cancers of the rectum, colon, liver, pancreas, stomach, and esophagus were assessed in the majority of epidemiologic studies.

- Colon Cancer (or Lung Intestine Cancer) (refer to figure 6)

Of particular relevance to fire fighters are the higher than expected rates of colon and rectal cancer observed in workers with exposure to asbestos. Colon Cancer figure 6 demonstrates that excess rectal cancer has been found consistently in many studies of fire fighters. A similar pattern was evident for colon, colorectal or intestinal cancer. An analysis by Burnett and colleagues of mortality data for fire fighters from 27 states found a statistically significant excess risk of rectal cancer of 1.8 times in fire fighters, particularly under age 65. Orris et al. reported significantly higher mortality in Chicago fire fighters during 1940-1988 for both rectal and colon cancers.

- Liver Cancer

Primary liver cancer is rare in the general population of the United States. Angiosarcoma of the liver has been associated with occupational and environmental exposures, including arsenic and vinyl chloride monomer from PVC. PVC can be assumed to be present at every structural fire site in recent years involving furniture, electrical wire, and cable insulation and water pipes, and at automobile fires.

The study with the largest number found a twofold excess of liver cancer mortality relative to the United States population among fire fighters in San Francisco who were employed between 1940 and 1970.

Most liver cancers are incurable.

- Skin Cancer

The most common risk factor for cancers of the skin is prolonged and intense exposure to sunlight. Occupational exposure to soot and tars, coke oven emissions, arsenic, and cutting oils also have been associated with increased risk. Substances containing carcinogenic agents such as PAHs and PCBs may be absorbed by the skin of exposed body areas, including the hands, arms, face and neck, and other sites when protective clothing is permeated. Contact with these substances can occur during fire knockdown and overhaul and during the cleaning of clothing or equipment.

Skin Cancer figure 7 summarizes the studies that addressed skin cancer risk. Feuer and Rosenman found an almost three-fold increase in skin cancer mortality for New Jersey fire fighters compared to the U.S. population (2.7 times greater). Risk among fire fighters clearly increased with duration of employment.

In conclusion, empirical data are sufficient to support the notion that fire fighters are exposed to carcinogens in their work environment.

In addition, the respiratory protection and other personal protective equipment used by fire fighters is of uncertain efficacy and in the real world. Additionally, the protective equipment is often not used in overhaul and carries carcinogens back to the fire station.

Furthermore, apart from known carcinogens, fire fighters are potentially exposed to thousands of new synthetic chemicals being introduced into houses and commercial structures yearly. There is much residual uncertainty as these chemicals are introduced.

The epidemiological studies presented demonstrate increased risk of several cancers that can be plausibly linked with carcinogenic exposures encountered by fire fighters in their work. The data most strongly suggest that fire fighters are at increased risk of developing and dying from leukemia, Non-Hodgkin's lymphoma, multiple myeloma, brain cancer, bladder cancer, and colon and rectal cancer.

Leukemia, Lymphoma, and Multiple Myeloma, cancers of the blood and lymphatic system, are caused by benzene and 1,3-butadiene. Exposure measurement show that fire fighters are exposed to high concentrations of benzene.

Skin cancer is caused by soot containing polycyclic aromatic hydrocarbons. Fire fighters are exposed to soot and polycyclic aromatic hydrocarbons;

Bladder cancer is caused by gasoline and polycyclic aromatic hydrocarbons. Fire fighters are exposed to gasoline and polycyclic aromatic hydrocarbons;

Colon and rectal cancer is caused by polychlorinated biphenyl compounds. Fire fighters are exposed to polychlorinated biphenyl compounds;

and the list continues...

The majority of studies that examined these cancers found markedly elevated risks of fire fighters, and there are no viable hypotheses or strong confounders that could readily explain their increased prevalence.

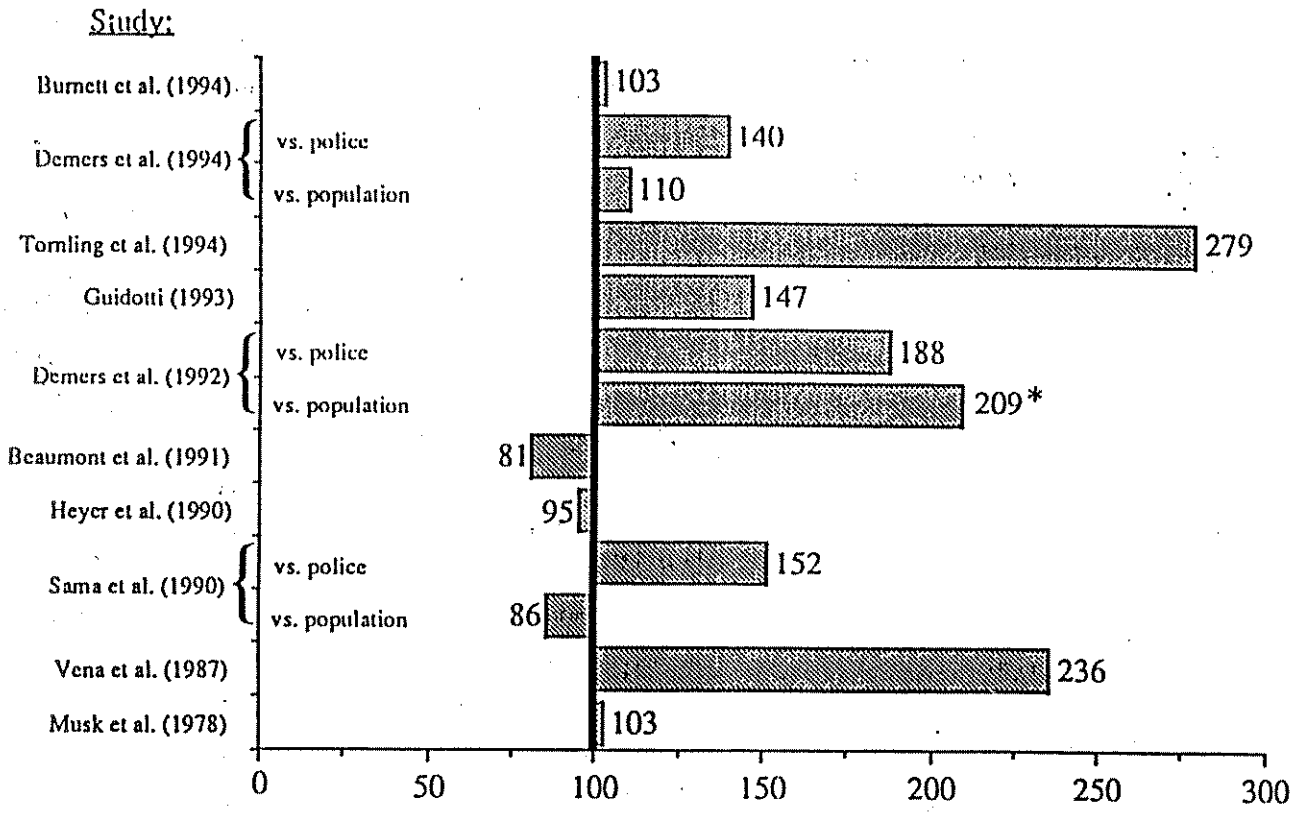
Although there are more questions to be answered, and more chemicals to be studied for adverse health effects, I believe that there is enough scientific and medical evidence to show that fire fighters suffer from cancer due to their exposures in performing tasks associated with fire fighting. I believe that Wisconsin should enact legislation to indicate that cancer is occupationally related to firefighting.

References:

Golden, Anne L., PhD., Markowitz, Steven B., MD, Landrigan, Philip J., MD, MSc: "The Risk of Cancer in Firefighters," OCCUPATIONAL MEDICINE: State of the Art Reviews - Vol. 10, No. 4, October-December 1995.

FIGURE 1

BRAIN CANCER AMONG FIREFIGHTERS

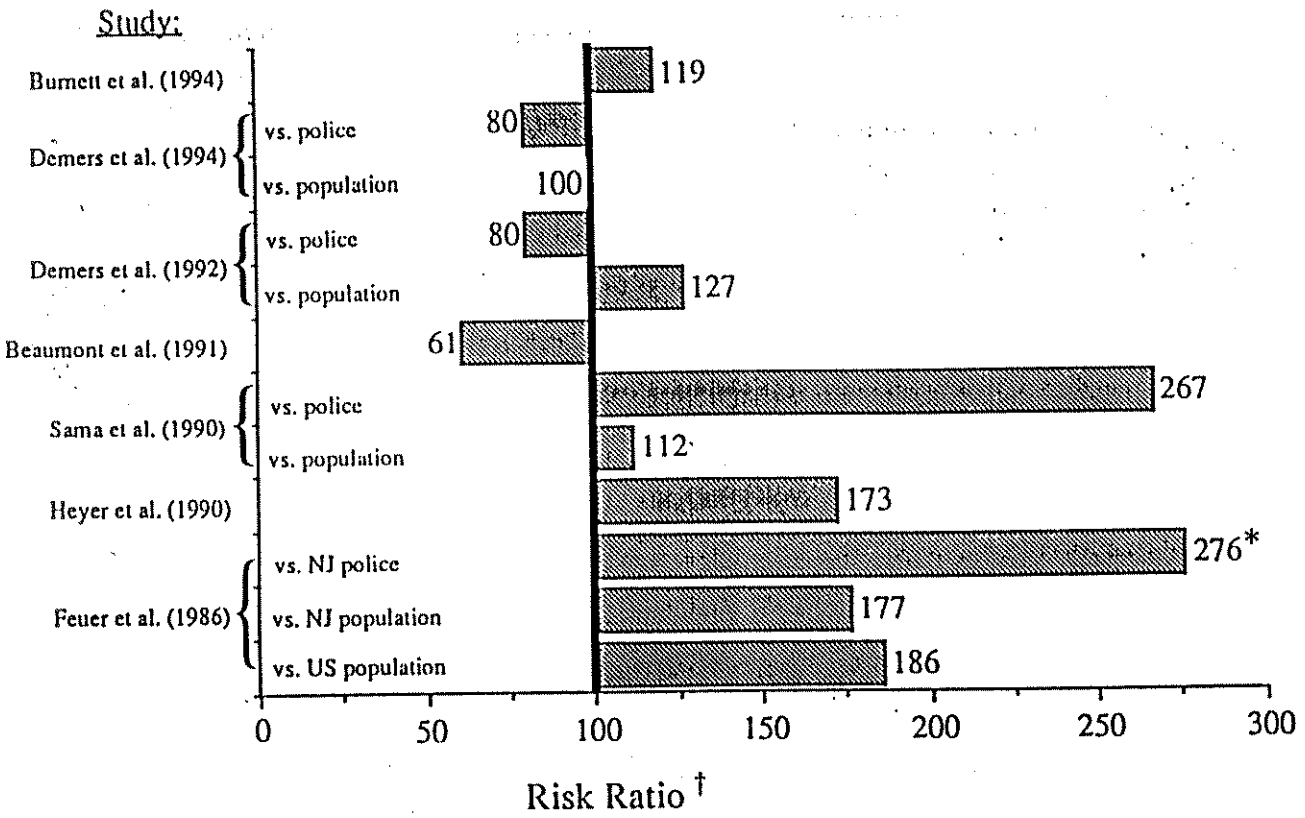


†Risk Ratio: SMR, PMR, or RR. Null value (no excess risk) equals 100.

*Statistically significant increase in risk.

Several studies have found elevated risk of brain cancer among firefighters. Generally, this excess risk occurs among younger firefighters and within 15-30 years of hire, i.e., after a relatively short latency period.

LEUKEMIA AMONG FIREFIGHTERS

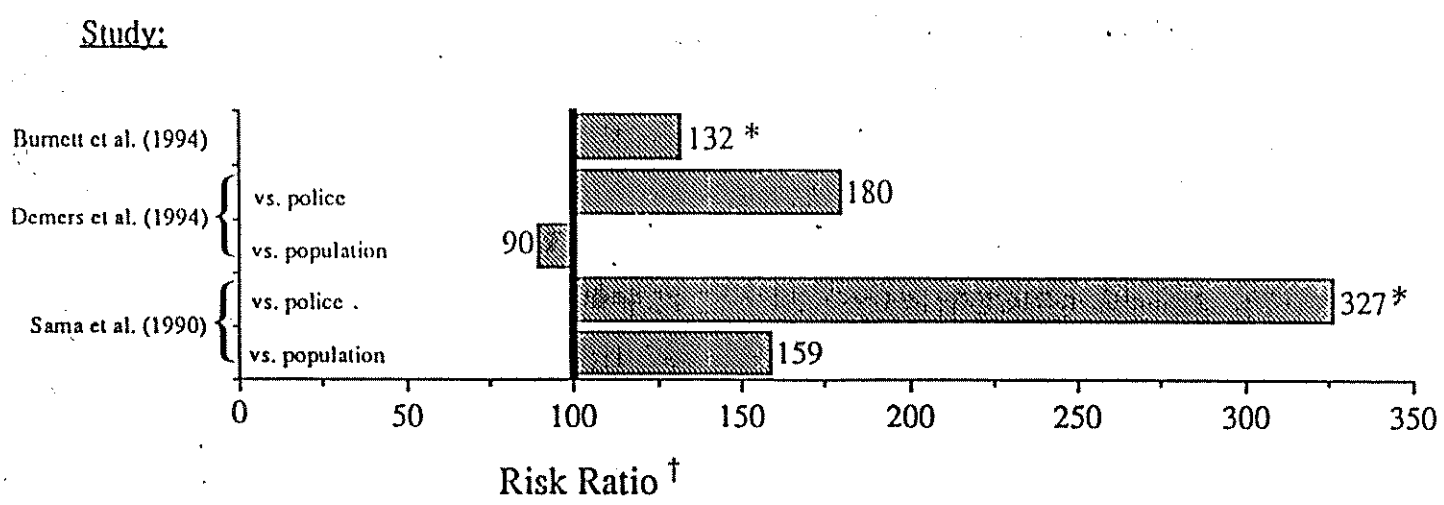


† Risk Ratio: SMR, PMR, or RR. Null value (no excess risk) equals 100.

* Statistically significant increase in risk.

This graph demonstrates that, in the majority of studies, firefighters clearly have excess risk of **leukemia** - almost 3 times the risk of police officers in some reports.

NON-HODGKIN'S LYMPHOMA AMONG FIREFIGHTERS



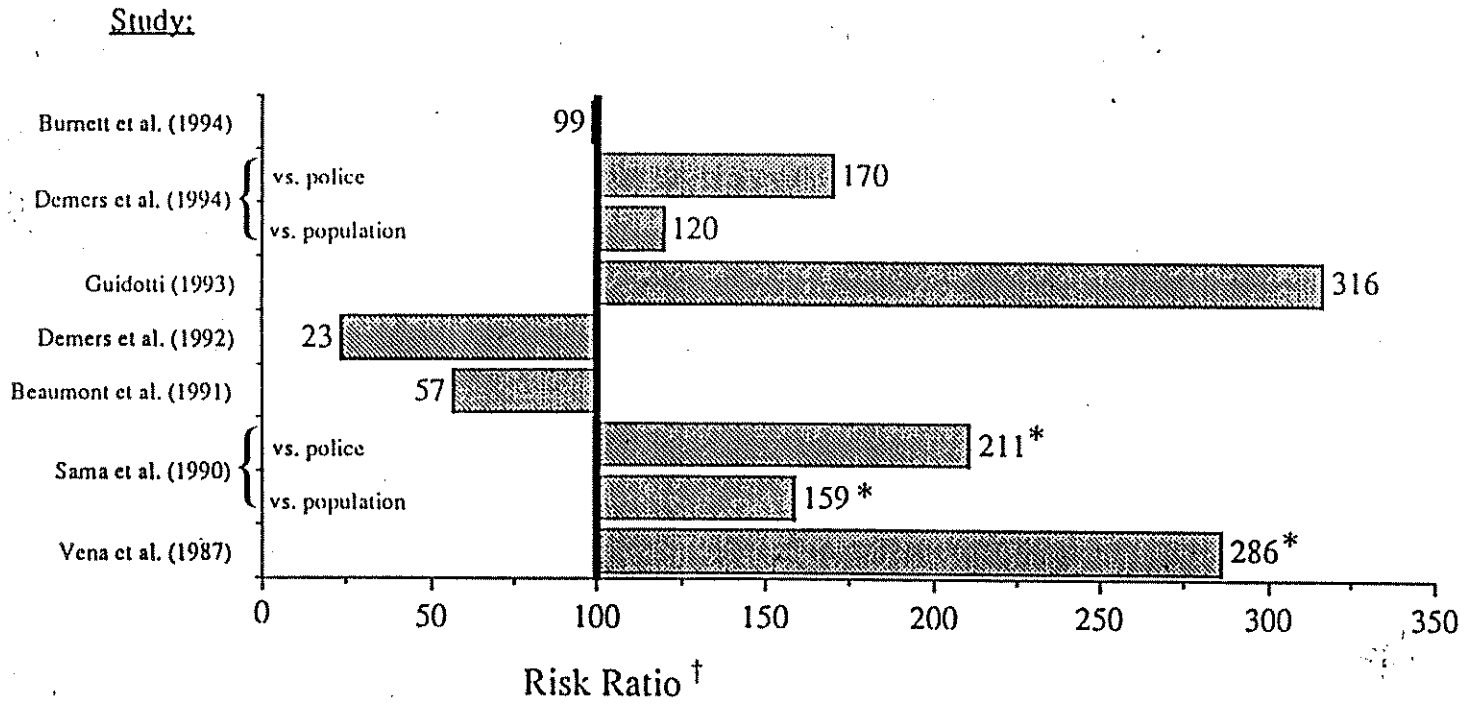
† Risk Ratio: SMR, PMR, or RR. Null value (no excess risk) equals 100.

*Statistically significant increase in risk.

All of the studies that looked at **lymphoma** found excess risk among firefighters, in comparison to police or the general population. The association with firefighting is strong and statistically significant in 2 of the studies.

FIGURE 4

BLADDER CANCER AMONG FIREFIGHTERS



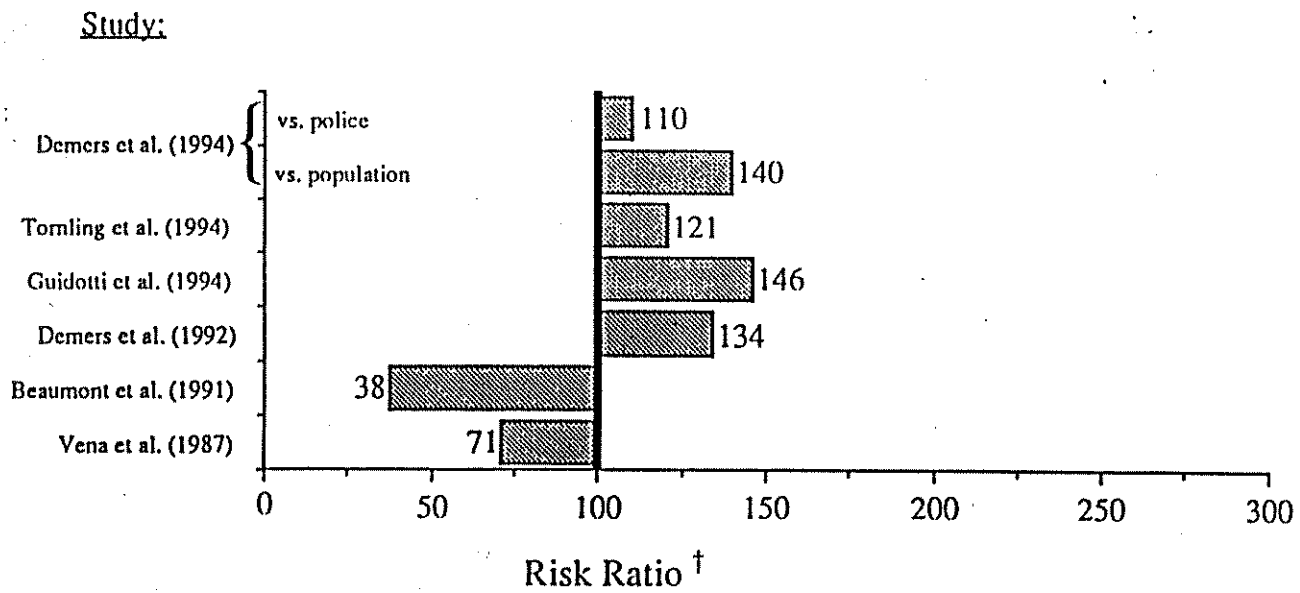
† Risk Ratio: SMR, PMR, or RR. Null value (no excess risk) equals 100.

* Statistically significant increase in risk.

The preponderance of evidence from these studies clearly implicates firefighting as a risk factor for bladder cancer. The excess risk among firefighters may be as high as 200%.

FIGURE 5

PROSTATE CANCER AMONG FIREFIGHTERS

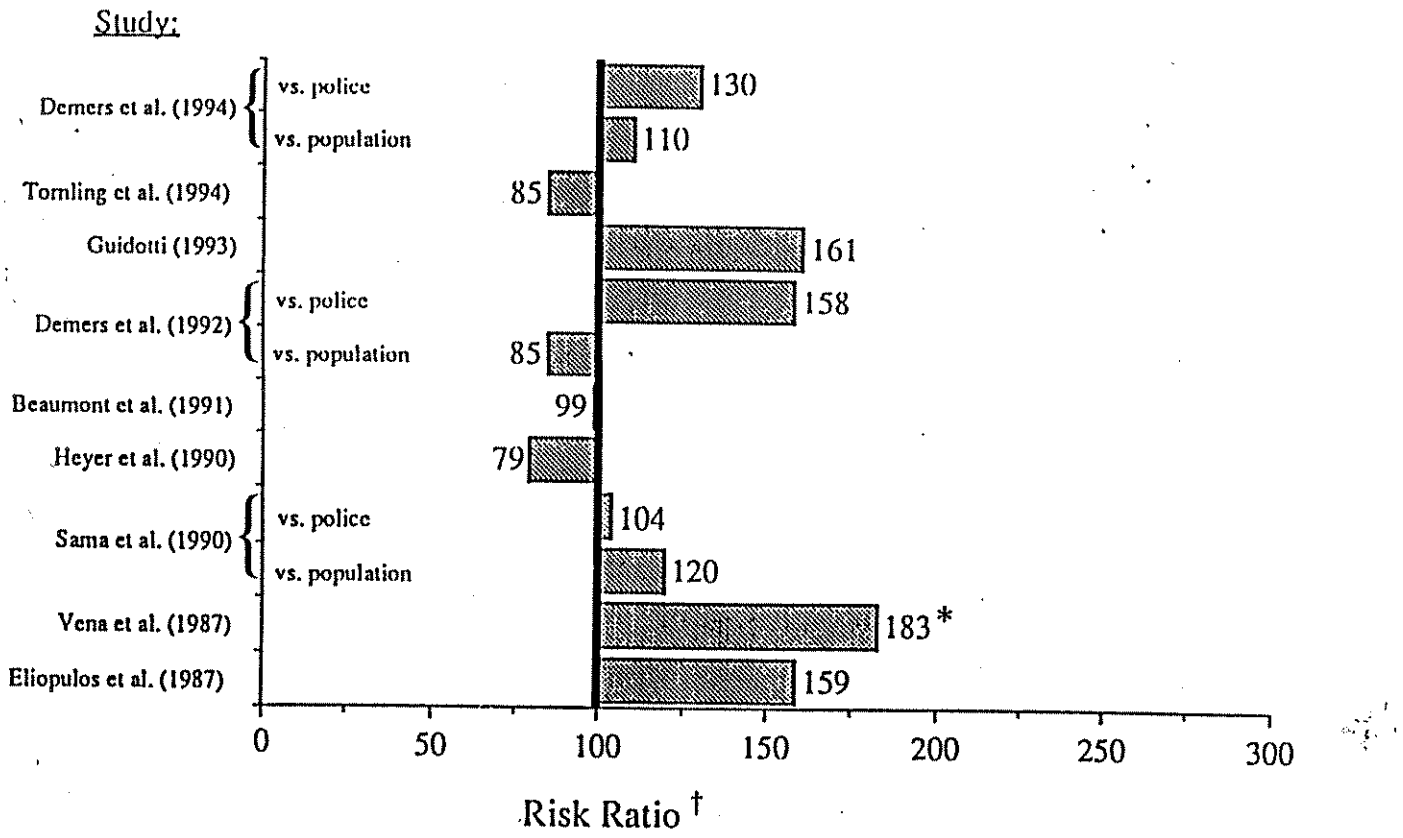


† Risk Ratio: SMR, PMR, or RR. Null value (no excess risk) equals 100.

Recent studies have consistently shown that prostate cancer is in excess among firefighters, compared to the general public.

FIGURE 6

COLON CANCER AMONG FIREFIGHTERS



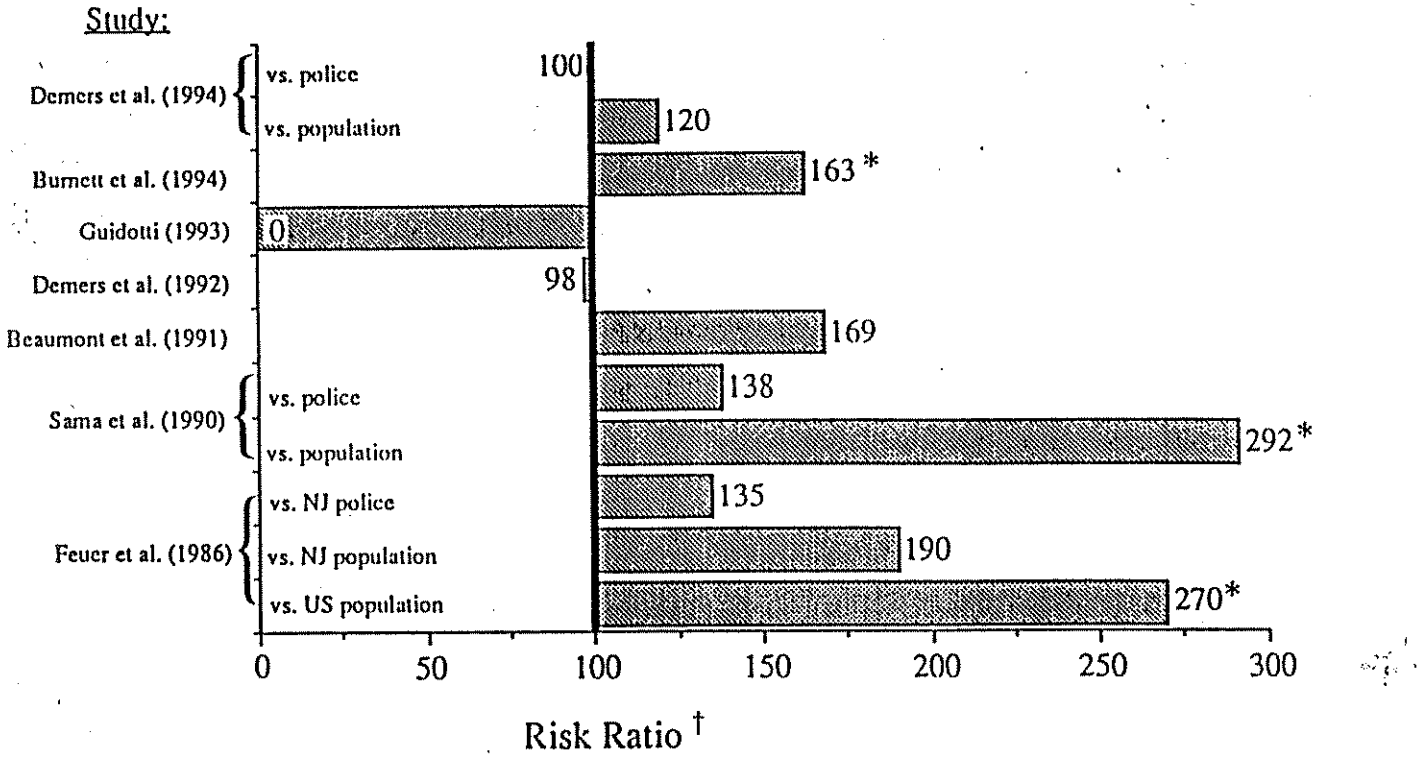
[1]Risk Ratio: SMR, PMR, or RR. Null value (no excess risk) equals 100.

*Statistically significant increase in risk.

Many studies looked at colon cancer and this graph demonstrates the consistent moderate to high excess risk found for firefighters.

FIGURE 7

SKIN CANCER AMONG FIREFIGHTERS



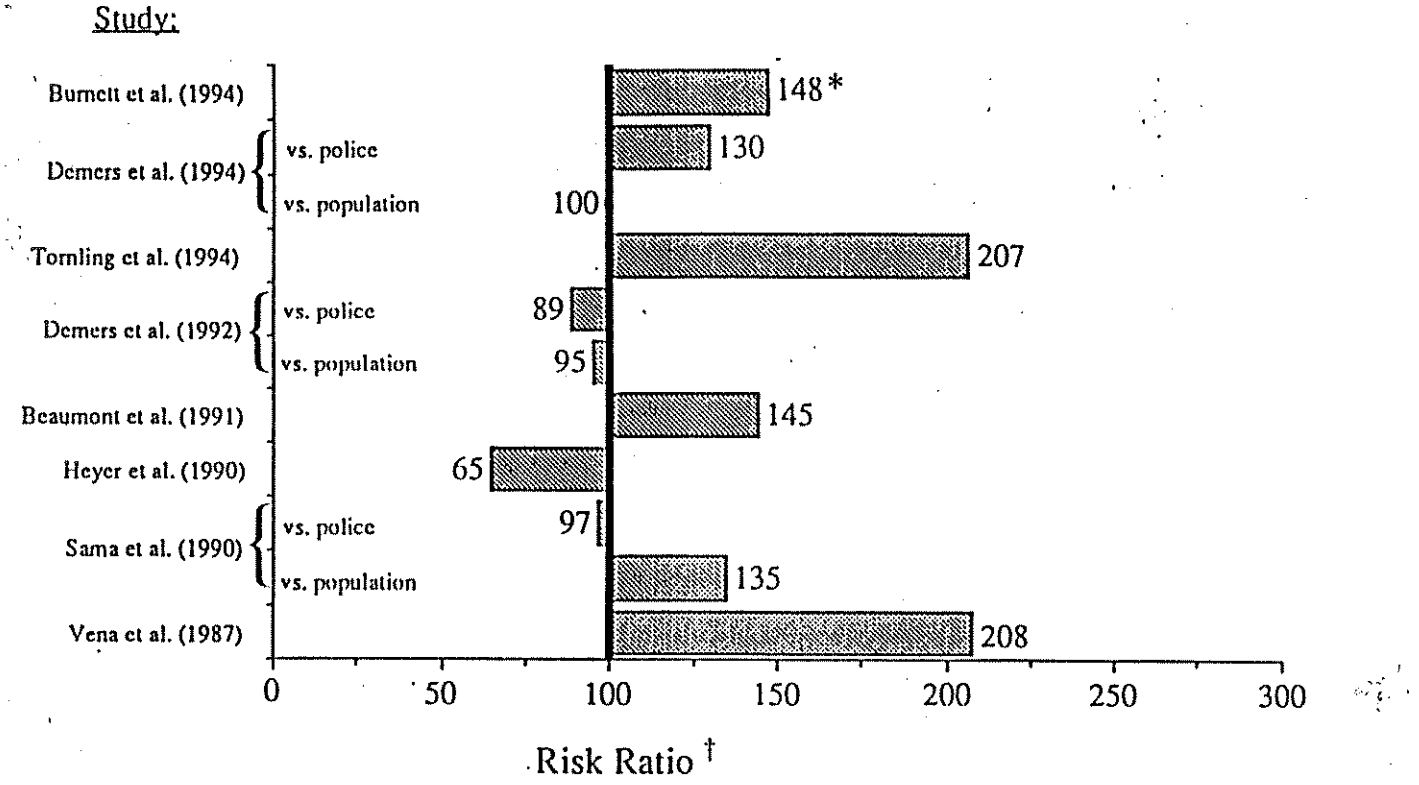
†Risk Ratio: SMR, PMR, or RR. Null value (no excess risk) equals 100.

*Statistically significant increase in risk.

This graph shows that the skin cancer risk of firefighters is markedly higher (up to 200% excess risk) compared to that of the general population. Most studies did not separate melanoma from non-melanoma skin cancers. However, because these studies were based on mortality rates, it is likely that most of the skin cancers were, in fact, melanoma, since the other forms of skin cancer are rarely fatal.

FIGURE 8

RECTAL CANCER AMONG FIREFIGHTERS

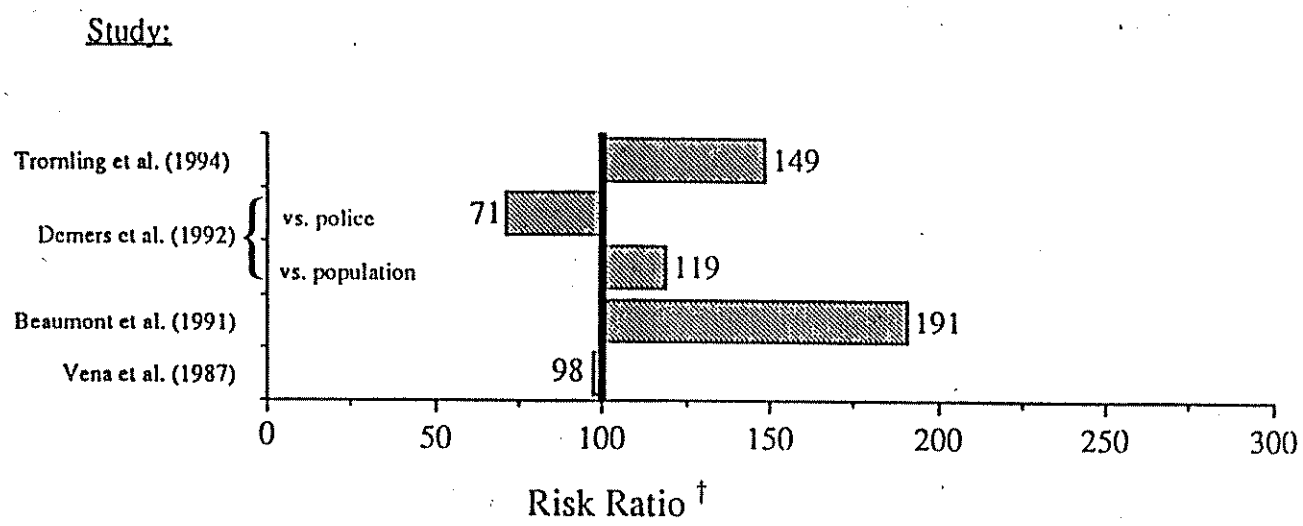


†Risk Ratio: SMR, PMR, or RR. Null value (no excess risk) equals 100.

*Statistically significant increase in risk.

These studies show that the risk of cancer of the rectum among firefighters appears to be even higher than the risk of colon cancer.

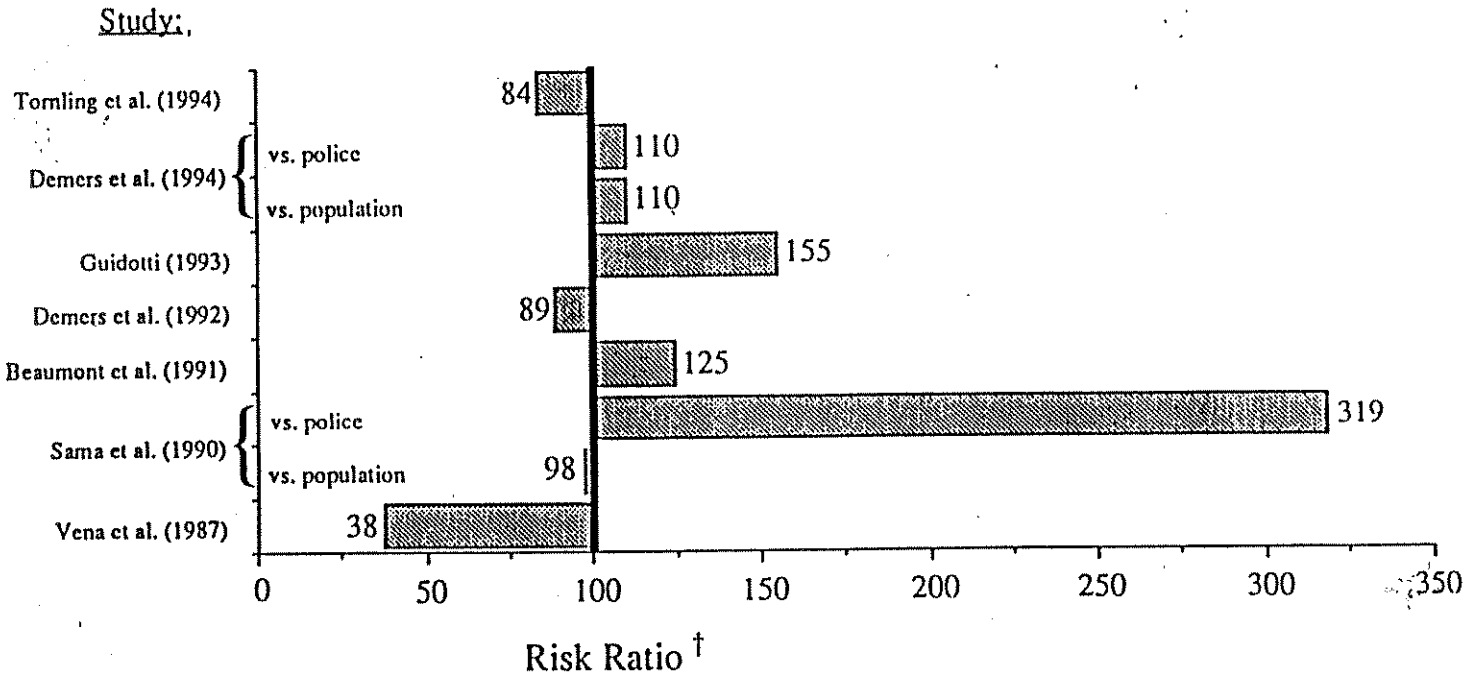
LIVER CANCER AMONG FIREFIGHTERS



†Risk Ratio: SMR, PMR, or RR. Null value (no excess risk) equals 100.

This graph indicates that in most studies, the risk of liver cancer was higher for firefighters than for the general population.

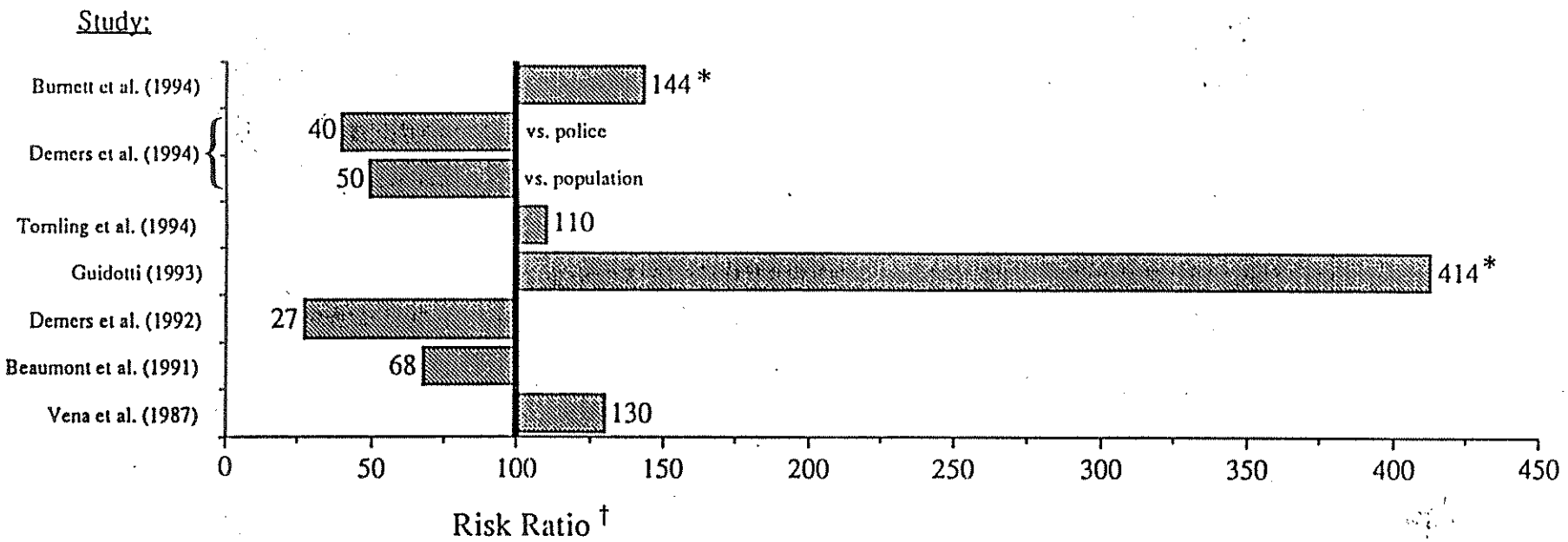
PANCREATIC CANCER AMONG FIREFIGHTERS



† Risk Ratio: SMR, PMR, or RR. Null value (no excess risk) equals 100.

Most studies showed a small to moderate increase in cancer of the pancreas among firefighters, although 1 study found that firefighters had more than 3 times the risk of police officers.

KIDNEY CANCER AMONG FIREFIGHTERS



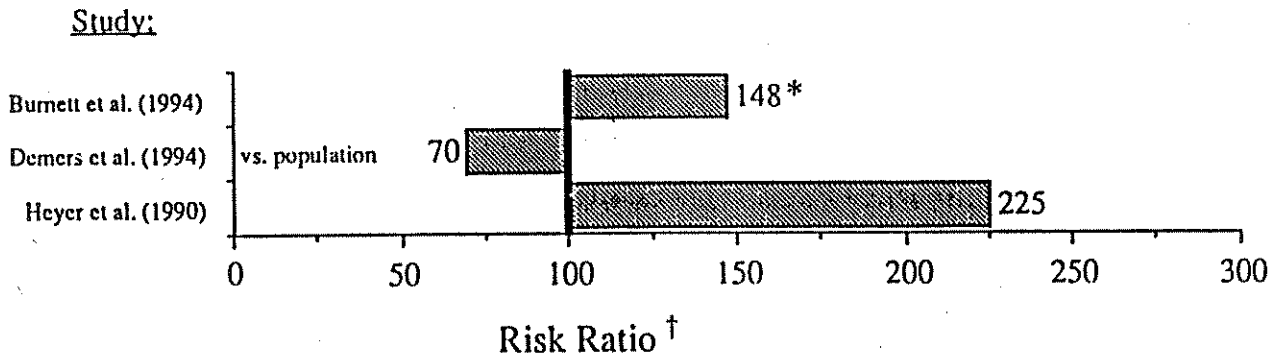
†Risk Ratio: SMR, PMR, or RR. Null value (no excess risk) equals 100.

*Statistically significant increase in risk.

The excess risk of **kidney cancer** among firefighters was statistically significant in 2 studies. Some studies did find lower than average risk in firefighters.

FIGURE 12

MULTIPLE MYELOMA AMONG FIREFIGHTERS

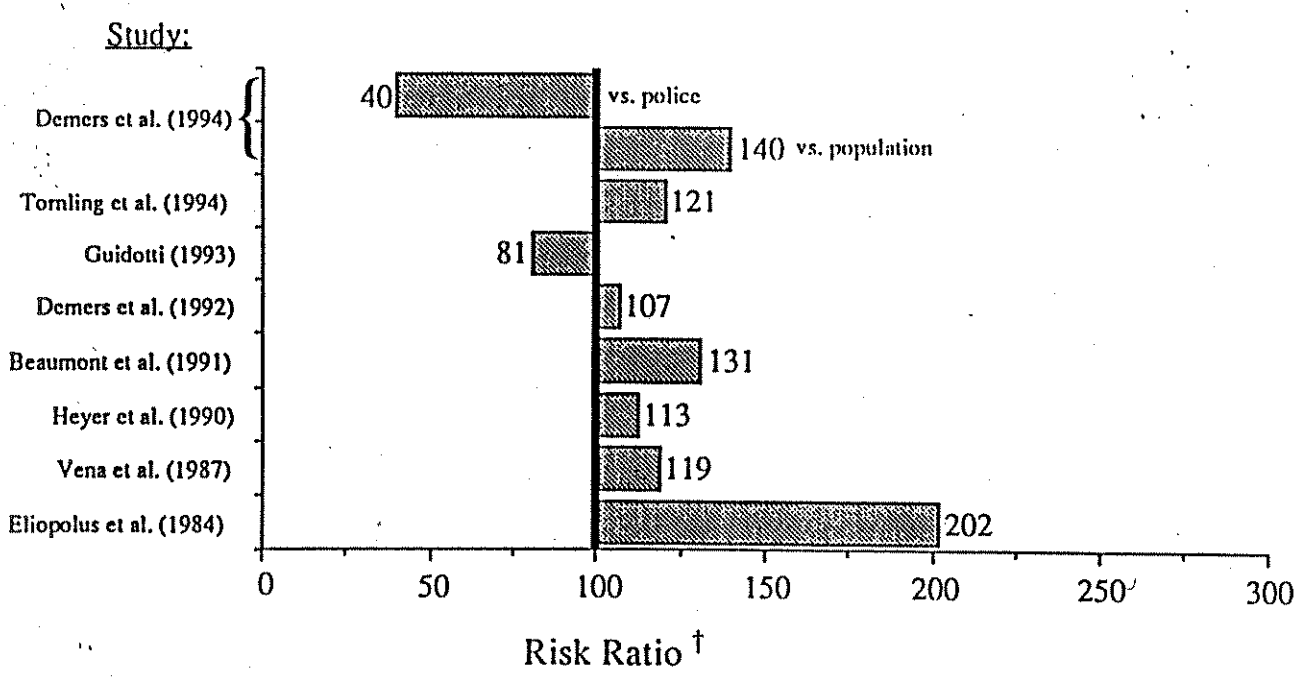


† Risk Ratio: SMR, PMR, or RR. Null value (no excess risk) equals 100.

*Statistically significant increase in risk.

Multiple myeloma was strongly associated with firefighting in 2 of these 3 studies. An analysis that combined the results of all the available studies (Howe and Burch) determined that multiple myeloma was one of the 3 cancers most consistently associated with firefighting.

STOMACH CANCER AMONG FIREFIGHTERS

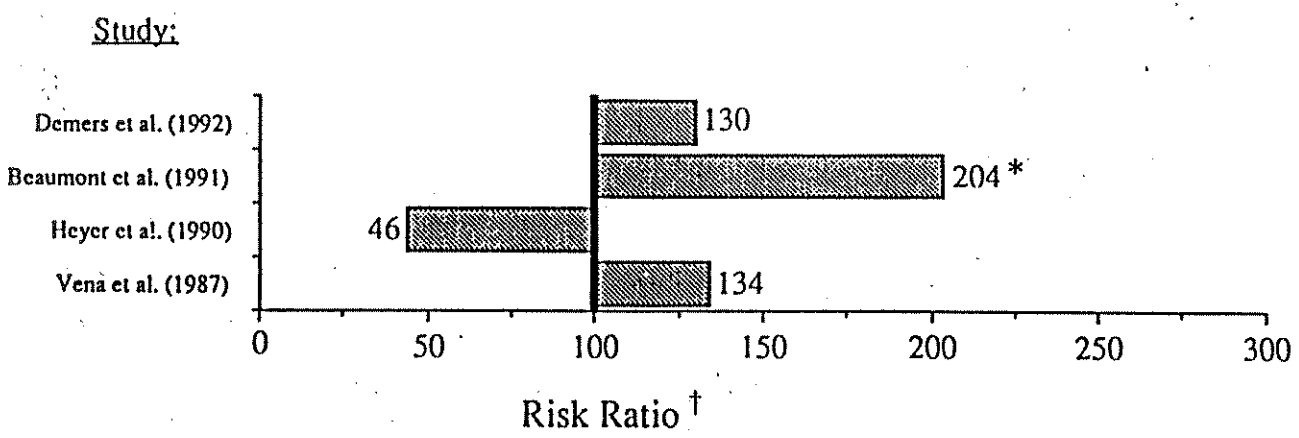


† Risk Ratio: SMR, PMR, or RR. Null value (no excess risk) equals 100.

This graph demonstrates that firefighters have consistently been shown to have higher rates of stomach cancer than the general public.

FIGURE 14

ESOPHAGEAL CANCER AMONG FIREFIGHTERS



† Risk Ratio: SMR, PMR, or RR. Null value (no excess risk) equals 100.

* Statistically significant increase in risk.

The majority of studies that included cancer of the esophagus showed that firefighters are at increased risk.

NON-LUNG CANCER DEATHS PRIOR TO 50TH BIRTHDAY

CITY/NAME of FIRE FIGHTER	DATE OF HIRE	DATE LEFT DEPT.	AGE LEFT DEPT.	DATE OF DEATH	AGE AT DEATH (IF APPLIES)	TYPE OF CANCER/ BODY SYSTEM AFFECTED FIRST
Milwaukee Co--William Dingle	1961	4/78	46	7/78	46	Melanoma/skin
Milwaukee--Dennis Schwantz	1980			12/88	37	Germ cell carcinoma
Milwaukee--Gregg A Miller	1974			2/97	48	Brain
Madison--John Dalton	1960	12/78				Back/spinal
Wauwatosa--Robert Eve	1967			7/94	48	Brain
West Allis--Douglas Johnson	1981	2/96	45	2/96	45	Groin
Wausau--Gerald Genrich	1978	10/86	36	10/86		Esophagus
Wausau--Thomas Reinicke	1977	6/96	46			Sinus/eye
Sturgeon Bay--Glen Anderson	1966	4/88		4/88		Leukemia
Manitowoc--William P Meyer	1971			6/83	35	Testicular
La Crosse--Donald Asselin	1960			4/97	46	Renal Cell carcinoma
Green Bay--Joseph Matzke	1966	3/89	47	3/89	47	Stomach
Eau Claire--Odin Mork	1961	10/86	48	11/86	48	Esophageal
Appleton--Timothy Mc Carthy	1969	6/77	30	6/77	30	Leukemia
Oak Creek--Jerry Bartek	1967	3/79	46	3/79	46	Liver

STATE OF WISCONSIN

APPENDIX TO 1997 SENATE BILL 436

REPORT OF THE JOINT SURVEY COMMITTEE ON RETIREMENT SYSTEMS

(Introduced by Senator Burke, cosponsored by Representative Gard, by request of Governor Tommy G. Thompson.) An Act relating to state finances and appropriations and miscellaneous matters. (*The Joint Survey Committee on Retirement Systems is concerned only with those sections dealing with retirement issues.)*

EXTRACT OF COMMITTEE'S RECOMMENDATION ON THIS BILL

PURPOSE OF CERTAIN PORTIONS OF THIS BILL

1. Section 84 would allow attachment of Wisconsin Retirement System (WRS) benefits to satisfy delinquent tax obligations of WRS members.

2 Sections 85 - 90 and Section 9315(1) change the wording of state code that complies with federal limitations on the maximum amounts of pensions payable from state-sponsored defined benefit plans and on the maximum amounts of contributions made into state-sponsored defined contribution plans.

3. Section 9215(1) relates to additional funding for the Department of Employee Trust Funds.

ACTUARIAL EFFECT

These three portions of Senate Bill 436 would have no material actuarial effect on the WRS.

PROBABLE COST

Section 84, allowing attachment of WRS benefits to satisfy delinquent tax obligations: There would be no cost for this bill, other than the cost of administering such attachments of benefits.

Sections 85 - 90 and Section 9315(1), changing wording of state code to comply with federal benefit amount limitations: There would be no cost for this part of S.B. 436.

Section 9215(1), relating to additional funding for ETF: This legislation appropriates $90,400 for each of fiscal 1997-98 and 1998-99.

PUBLIC POLICY

1. **Section 84, allowing attachment of WRS benefits to satisfy delinquent tax obligations:** The purpose of this bill is to enable collection of delinquent taxes through attachment of pensions payable to members of the WRS.

2. **Sections 85 - 90 and Section 9315(1), changing wording of state code to comply with federal benefit amount limitations:** This is mere substitution of code now allowed by federal law that complies with federal tax code for retirement plans on an ongoing basis, by referencing the most current federal law in a general way, rather than by specifically referencing the most recent year that federal benefit or contribution caps were changed.

3. **Section 9215(1), relating to additional funding for ETF:** The purpose for this funding and, therefore, any public policy implications are not clear from reading S.B. 436.

1997-98 LRB-0006/1

STATE OF WISCONSIN

APPENDIX TO 1997 SENATE BILL 59

REPORT OF JOINT SURVEY COMMITTEE ON RETIREMENT SYSTEMS

(Introduced by Senators C. Potter, Schultz, Risser, Welch, Darling, Rosenzweig, Buettner, Drzewiecki and Plache; cosponsored by Representatives Otte, Ziegelbauer, Johnsrud, Goetsch, Freese, Ourada, Linton, Kreibich, Boyle, Murat, Handrick, Ainsworth, Ward, Baldwin, Dobyns, Musser, Kaufert, Albers, Vander Loop, Huber, Springer, Owens, Meyer and Gronemus.) An Act to amend 40.02 (48)(am) and 40.02 (48)(c), and to create 40.02 (17)(m) and 40.65 (4v) of the statutes; relating to classifying state probation and parole officers as protective occupation participants for the purposes of the Wisconsin retirement system.

EXTRACT OF COMMITTEE'S RECOMMENDATION ON THIS BILL

PURPOSE OF THE BILL

Public employee participants under the Wisconsin Retirement System (WRS) fall under four classifications: general employees and teachers, protective employees with social security, protective employees without social security, and elected officials and state executives. The statutory definition of a protective occupation requires that the principal duties involve law enforcement or fire suppression or prevention, require frequent exposure to a high degree of danger or peril, and require a high degree of physical conditioning. Public employee participants may fall under that category either by specific designation of that position under 40.02 (48)(am), or by employer certification as a protective, or by employee appeal to the board of the Department of Employee Trust Funds (DETF). The purpose of this bill is to specifically designate state probation and parole officers as protective occupation participants under the WRS. Such designation would become effective for service performed on and after the effective date of this bill, and the bill specifically provides that the change in classification under the WRS would not apply to creditable service earned before the effective date. The bill further amends WRS law to specifically include probation and parole officers under the s. 40.65 death and

disability insurance program for protectives who are injured in the line of duty after the effective date.

ACTUARIAL EFFECT

This bill would have no material actuarial effect on the WRS.

PROBABLE COST

This bill would newly classify state probation and parole officers as protective occupation participants under the WRS. As such , this legislation would have no significant effect upon the contribution rates that are determined each year by the ETF Board for the various classifications of WRS participants. On the other hand, this change in classification for effected officers would require employees and employer agencies involved to contribute to the WRS at the protective rate in lieu of contributions at the general employee rate.

Assuming an effective date of 1/1/99, contribution rates would increase for the effected positions by about 5.0% of covered payroll, including the costs of the s. 40.65 program and the state's pickup of employee contributions. It is estimated that there will be about 1,200 positions with a projected 1999 payroll of $37.0 million. The increase in contribution rates for calendar year 1999 would, therefore, be about $1,850,000.

Contribution rates expected to become effective with the 1997 valuation of WRS were used for this estimate. These rates reflect the expected results of modifying actuarial assumptions to be used for that valuation.

PUBLIC POLICY

Under present law, protective occupation participants have a higher benefit formula than general employees, an earlier normal retirement than general employees, and a slightly higher employee contribution rate than general employees. WRS statutes clearly define the basic requirements for protective designation and provide that positions may be covered in that classification by statutory designation, by employer certification, or by employee appeal to the DETF Board.

This bill would bypass the employer certification process relative to the WRS classification for about 1,200 state probation and parole officers. Protective designation primarily confers a higher benefit formula and greater death and disability protection under s. 40.65, Stats.

LRB-1865/1

1997-98

STATE OF WISCONSIN

APPENDIX TO 1997 ASSEMBLY BILL 362

REPORT OF JOINT SURVEY COMMITTEE ON RETIREMENT SYSTEMS

(Introduced by Representatives Freese, Dobyns, Sykora, Turner, Schafer, Huber, Kreibich, Springer, Johnsrud, Powers, Gronemus, Brandemuehl, Meyer, Murat, M. Lehman, Boyle, Handrick, Musser, Goetsch, and Ott; cosponsored by Senators Moen, Roessler, Breske, Drzewiecki, Risser, Schultz, Panzer and Wineke.) An Act to amend 40.02 (48)(am) and 40.02 (48)(c); and to create 40.02 (17)(m) and 40.65 (4v) of the statutes; relating to classifying county jailers as protective occupation participants for the purposes of the Wisconsin retirement system.

EXTRACT OF COMMITTEE'S RECOMMENDATION ON THIS BILL

PURPOSE OF THE BILL

Public employee participants under the Wisconsin Retirement System (WRS) fall under four classifications: general employees and teachers, protective employees with social security, protective employees without social security, and elected officials and certain state executives. The statutory definition of a protective occupation requires that the principle duties involve law enforcement or fire suppression or prevention, require frequent exposure to a high degree of danger or peril, and also require a high degree of physical conditioning. Public employee participants may fall under that category either by specific designation of that position under 40.02 (48)(am), by employer certification as a protective, or by employee appeal to the board of the Department of Employee Trust Funds (DETF).

The purpose of this bill is to specifically define county jailers in all counties of the state as protective occupation participants under the WRS. Some county jailers have already been designated as protective participants by their employers, and this legislation would classify all other county jailers as protective who are now classified as general employees. For

jailers who would become "protective" under this bill, only their creditable service earned after the bill's effective date would count as protective service.

ACTUARIAL EFFECT

This bill would have no material effect upon the actuarial goals or balance of the WRS.

PROBABLE COST

Based on earlier estimates of the number of county jailers and their salary level, it is reasonable to assume that 450 jailer positions would newly become protective, and that these positions will have an average salary in 1999 of $34,200, for a total covered payroll for effected positions of $15.4 million. The employer retirement costs would increase by about 2.1%, and added employer costs for s. 40.65 death and disability benefit would average about 3.5% of payroll for a total added employer cost of $862,000. Employee retirement costs would decrease by 0.6% of payroll, or $92,000 – an amount which is subject to possible employer "pick-up". Hence, the total added costs for mandating these positions as protectives would be about $770,000 during 1999, and all of these costs would be allocated to county government.

Contribution rates expected to become effective with the 1997 valuation of WRS were used for this estimate. These rates reflect the expected results of modifying actuarial assumptions used for that valuation.

PUBLIC POLICY

Under present law, protective occupation participants have a higher benefit formula than general employees and an earlier normal retirement than general employees. WRS statutes clearly define the basic requirements for protective designation, and provide that positions may be covered in that classification by specific statutory designation, by employer certification, or by employee appeal to the DETF Board.

The classification status of county jailers has previously been reviewed by the DETF Boards and also the Retirement Research Committee. The DETF carried out a county survey of jailers which reflected differences in county requirements for physical fitness, the

degree of contact with inmates, whether or not the positions were deputized, and other duties involved. The DETF survey indicated that there was not a uniform job description for county jailers across the state. Appeals to the DETF Board by county jailers have generally been rejected in the past.

The status of county jailers and other groups seeking protective status was also reviewed by an RRC subcommittee working with the s. 40.65 death and disability program. That subcommittee also chose not to make any recommendations for a mandated protective status for county jailers. It should be further noted that employers may certify their county jailers as protective if the employers determine that those positions meet the basic qualification standards for protective status as found under s. 40.02 (48)(a) , Stats.

This bill would bypass the employer certification process relative to the determination of protective status under the WRS. Recent changes in normal retirement provisions for general employees and protectives have reduced much of the difference between these groups relative to normal retirement (57/30 years vs. 53/25 years). Accordingly, protective designation primarily provides a higher benefit formula and greater death and disability protection under s. 40.65, Stats.

One argument being heard in support of this bill is that the state's current practice of housing state inmates in county jails may be subjecting county jailers to a more dangerous class of inmates, and that therefore the state owes it to county jailers to give them protective status under the WRS. A November 1997 report by the Wisconsin Legislative Audit Bureau, "An Evaluation, Corrections Costs, Department of Corrections" (report No. 97-18) lists these eight counties as having contracts with the state to house state inmates:

County	Current No. Of Inmates	Are Jailers Protective?
Chippewa	10	?
Dodge	0	No
Jackson	0	No
Jefferson	30	?
Manitowoc	42	No
Outagamie	220	No
Rock	0	Yes
St. Croix	14	Yes
	316	

Therefore, it appears that as of November 1997, only one in nine of Wisconsin's 72 counties had contracts to house state prisoners, and that only 5 of those 8 counties were actually doing so, with 70% of all such state prisoners residing in Outagamie County's jails. Two of the eight counties (Rock and St. Croix) have already given their jailers "protective status", four have not, and Chippewa and Jefferson Counties failed to provide this information for this report.