Approved: 2-12-93
Date

MINUTES OF THE HOUSE COMMITTEE ON PUBLIC HEALTH AND WELFARE.

The meeting was called to order by Chairperson Joann Flower at 1:30 p.m. on February 10,, 1993 in Room 423-S of the Capitol.

All members were present except:
Rep. Greta Goodwin, excused.

Committee staff present:
William Wolff, Legislative Research Department
Norman Furse, Revisor of Statutes
Sue Hill, Committee Secretary

Conferees appearing before the committee:
Rep. Henry Helgerson
Brian Gilpin, Tobacco Free Kansas Coalition
Paula Marmet, Director of Office/Chronic Disease and Health Promotion/Dept. of H/E
Dr. Larry Holcomb, Vice President of Environmental Services, Olivet, Minnesota
Betty Dicus, Chairperson Board of American Cancer Society, Kansas Division
Don Richards, Vice President, Ks. Lung Association
Simon Turner, Director of Healthy Buildings International, Inc. Fairfax, Virginia
Gwen Craig, interested citizen, Topeka, Ks. (former capitol bldg tour guide)
Tad Carper, Director of Marketing, Ks. Expo Center, Topeka, Ks.
Betsi Hoffman, interested citizen, Topka, Ks. (~~former capitol bldg tour guide~~)
Rev. Richard Taylor, retired member of Ks. West Conference of United Methodist Church
Rep. Ted Powers
George Puckett, Ks. Restaurant and Hospitality Association
Rex Haley, Ks. State Bowling Proprietor's Association
Charles Nicolay, Ks. Oil Marketer's Association
Allen Alderson, The Tobacco Institute
Elizabeth Taylor, Executive Director, Ks. Tobacco-Candy Distributors/Vendors, Inc.
George Potts, Wichita Sedgwick County Board of Health
Amy Laughlin, graduate student at University of Kansas
Dave Pomeroy, Kansans for NonSmokers Rights

Written testimony only provided by:
Jim Seels, Smoker's Rights
Jerry Slaughter, Executive Director, Kansas Medical Society
John McAllister, Regional Director, National Energy Management Institute

Others attending: See attached list

Chair called meeting to order.

HEARINGS BEGAN ON: HB 2223:

Rep. Helgerson offered hand out (Ättachment No.l-A) written testimony,(Attachment No.l-B),fact sheet,(Attachment No.l-C), copy of news clipping,(Attachment No. l-D, news article from Executive Report.

Rep. Helgerson explained HB2223 and detailed rationale, i.e., a bad example is being given to children, state employees, and the general public by not banning smoking in the Capitol when it is being banned in the schools, many public work places. Tobacco smoke continues to damage the murals in the Capitol. There is an urgent need to limit and discourage smoking because of the additional costs for health care. It is the right of every individual to breath clean air. He noted some may dispute scientific evidence in new reports, but all medical information both by the Kansas Association and the National Association clearly support the ban on

smoking not only in the Capitol, but in other buildings. Rep. Helgerson answered questions.
Chair announced since there is a large number of persons listed on the agenda, a timer would be used and each Conferee would be allowed three minutes to present their remarks. She thanked all present for their cooperation.

Brian Gilpin, Tobacco Free Kansas Coalition, (Attachment No.2) He noted a landmark report on January 7, 1993 by the Environmental Protection Agency confirms that other people's cigarette smoke is more than just smelly and annoying, it is deadly. He gave statistics on deaths caused by secondhand smoke. He noted the EPA's report designates environmental tobacco smoke (ETS) as a Group A carcinogen. He expressed concerns, i.e., that children are involuntary victims of secondhand smoke; millions of dollars have been spent to remove asbestos from buildings because it was considered a threat, and in his view, the removal of tobacco smoke from the Capitol and other public buildings will not cost a dime. He drew attention to the articles in his attachment. He urged support of HB 2223.

Paula Marmet, Director of Office of Chronic Disease and Health Promotion, Department of Health and Environment (Attachment No.3) She cited statistics on deaths related to cigarette smoke, stating this is the second leading cause of death. She noted smoking attributable illness costs Kansas $594 million in 1994. She indicated recent surveys indicate from 80%-90% of Americans favor restricting or banning smoking in public places. She stated support on both HB2223 and HB2136 by the Department of Health and Environment.

Dr. Larry Holcomb, Vice President of Environmental Services, Attachment No.4), drew attention to the comprehensive statistical information in his hand out that indicates data he had compiled on the quality of air with testing done in various offices, restaurants, public facilities, private homes, cars, busses, trains, etc. Mr. Holcomb stated the EPA report mentioned in testimony earlier today is not a new report. This report states environmental tobacco smoke (ETS is a Group A carcinogen, but he thinks it is not. If it is as EPA claims, it is in a class with 14 other class A carcinogens. He listed several other carcinogens, stating there are standards set for acceptable levels, i.e., asbestos; arsenic. He detailed how data had been compiled and felt it an unfair report, noting that no public place had been included in the survey, nor an office setting had been included in the compilation of data for the report.

Betty Dicus, Chairperson of the Board of American Cancer Society, Kansas Division, offered hand out (Attachment No.5). She spoke in support of both HB2223 and HB2136. She noted smoking is the most preventable cause of death in our society. She cited statistics of related deaths, diagnosed diseases related to cigarette and tobacco use. She noted further smokers comprise approximately 26% of the adult population and consume one-half trillion cigarettes annually, which translates into nearly universal exposure to enviornmental tobacco smoke. She urged favorable support of both bills before Committee today.

Don Richards, Vice President, Ks. Lung Association , (Attachment No.6), stated environmental smoke can be placed into two categories, i.e., mainstream and sidestream smoke. He explained. He cited statistics offered by the EPA reports. He drew attention to illnesses attributed to adverse affects from cigarette smoke, and the fiscal impact created by health-related diseases, decreased productivity on the job, miscellaneous costs in the home, i.e., carpet and furniture cleaning, repair, computer repair, insurance premiums. He urged careful consideration of HB2223 and HB2136.

Simon Turner, Director of Health Buildings International, Inc. (HBI) offered hand out (Attachment No.7). He detailed the operation of his Company, i.e., the study of indoor air problems. He detailed the process involved and stated various Commercial business and Government buildings that are clients. He noted many companies have adopted the recommendations made by his Company of maximizing the capacity of the ventilation system to obtain healthier air. He noted it is not always necessary to ban smoking in buildings to have good air quality, but many companies have done so. They recommend for good quality air, to have good ventilation systems, good building operations, good maintenance operations, whether or not smoking is allowed, to use good common sense if smoking is allowed, such as providing separate areas for smokers making sure these areas are correctly ventilated. They see many buildings with poor quality air where there is no smoking permitted. He noted that if the goal of this Committee is to address the issues of clean indoor air, it is imperative that there is a focus on the real issues, i.e., to specify minimum ventilation rates, minimum filtration standards, and minimum levels of building hygiene with inspection protocol to ensure compliance.

Gwen Craig, A Topeka resident offered hand out (Attachment No.8) regarding HB2223. She related her experiences as a former tour guide in the Capitol building and the dismay of citizens, many of them children, their remarks on the blue smoky haze and choking odor made by the tobacco smoke in the building. She was embarassed, and concerned for the health of individuals who work in and visit the Capitol. She questions a delay in waiting until July of 1995 to limit smoking in this beautiful historic structure, and recommended June of 1993as a better date for mandating a smoking ban in the Capitol. She urged support..

Note: Mr. Carver's remarks concerned (HB2136).

Tad Carper, Director of Marketing, Kansas Expo Center, stated there is a need to exercise some moderation in this issue. As HB2136 now stands, it is a blanket ban on smoking in public places. The Ks. Expo Center depends on discretionary income, and if we legislate what individuals can do in their spare time, it will effect the income of the Expo Center as well as many other businesses. The Expo Center is a unique facility, very large with a very adequate ventilation system, separate smoking areas available, so those individuals who do not smoke do not have to walk through the area where there is smoking. He feels there is a need for some revision in the current language in HB2136 that will allow for some exceptions.

Betsy Hoffman (Attachment No.9) urged members to base their decision on HB2136 on the recently published EPA report on Environmental Tobacco Smoke. She does not believe mandatory restrictions on smoking are necessary. Most smokers are polite and show consideration, and a willingness to compromise. Smokers pay taxes like first class citizens, so should not be treated as second class citizens with this type of a mandatory regulation. She is not asking for an open smoking policy, only for smokers to be treated fairly. She drew attention to numerous articles in her hand out that provide interesting data on the smoking ban issue.

Richard Taylor (Attachment No. 10) stated support for both HB2223 and HB2136. He is a non smoker. He talked about his personal medical history, how he lost his voice to cancer. He played a tape of his voice prior to surgery and related a story about marbles in the mouth. He urged support for this legislation.

Numerous questions were asked.

CHAIR CLOSED HEARINGS ON HB 2223.

HEARINGS BEGAN ON HB 2136.

Rep. Powers, sponsor of HB2136, offered hand out (Attachment No. 11), and noted he is not asking to ban smoking, just to remove it from those who attend public places, i.e., you, our peers, children, grandchildren. He drew attention to a fact sheet in the Attachment and the Kansas statutes and detailed those statutes. Rep. Powers then detailed language in HB2136 , noting the language is stringent and he makes no apologies for that. He noted when smoking is a detriment to everyone, then the smoker should not be allowed to smoke in public where others are present and will be adversely affected by that smoke. He dedicated his request for this legislation to two of his dear friends, who both died of emphysemic lung cancer, one a chain smoker, one a non smoker. He stated both these friends drowned of ETS.

George Puckett, Kansas Restaurant and Hospitality Association (Attachment No.12) , stated food service operators are confronted daily with the conflict between a smoker's right to smoke and the non-smoker's rights to a smoke-free environment. The Restaurant Association he represents, contends the government should leave the individual business to working out arrangements in regard to smoking that suit their clientele and operations. Very small restaurants might have a need for a different set of requirements than a larger facility that has a liquor license. A responsible operator needs to accommodate all customers. Most restaurants have made the necessary changes as this type of legislation has been enacted previously, some at great expense to the operator, and they have conformed to state smoking laws and local ordinances. It is his belief that the restaurant owner shouldn't be singled out as a scapegoat.

Rex Haney, Kansas State Bowling Proprietor's Association (Attachment No.13) urged members to leave the designated smoking areas in public places as restrictions on smoking, not a total ban. Most bowling facilities are working independently to make air quality more efficient for customers. He detailed many changes that have been implemented in respect to smoking areas. He detailed results of a straw poll taken last week. He stressed concerns, i.e., losing league play bowlers if a total smoking ban were to be enacted; loss of revenue; the need for more time to evaluate studies made in bowling centers to determine how changes can be made for the benefit of all customers.

Charles Nicolay, Kansas Petroleum Marketer's Association (no hand out), spoke in opposition of HB2136. He noted a large division of the Kansas Oil Marketer's Association is Convenience Center operators. He stated concerns, i.e., placing the burden on an operator to enforce a smoking ban when perhaps the competition across the street would not be doing the same. If the customer wishes to smoke, the store owner complying with the ban will lose business to the competitor across the street, who may not wish to comply.This appears to be an un-enforceable law.

Alan Alderson stated he had planned to introduce both Dr. Holcomb and Mr. Turner who have earlier presented their testimony. Both gentlemen are here today at the request of the Tobacco Institute. He applauded their expertise. The testimony was designed to cover both HB2223 and HB2136.

Elizabeth Taylor, Kansas Tobacco-Candy Distributors and Vendors, Inc. (Attachment No. 14), stated opposition to HB 2136 because of the economic impact of banning legal use of legal products. She stated the current trends in providing proper ventilation methods, providing designated areas for adults to participate in consumption of this legal product, the perceived danger to non-smokers has been reasonably dealt with. She rejects the idea that it is in the best interest of the public to regulate their right to choose.

George Potts, (Attachment No.15) digressed from his hand out, and related his personal health history. He grew up in a home where both parents smoked, then he smoked, had many health problems related to the smoking. Now he does not smoke, cannot be around second hand smoke and regulates his activities because of the adverse effects that second hand smoke has on his health. He urged support of HB2136.

Amy Laughlin, (Attachment No.16) a KU grad student stated she has partially paid for her education by waiting tables part-time. Now she must quit her job because of second hand smoke at the suggestion of her physician. She is pregnant and stated the effects of passive smoke on an unborn child are horrific, i.e., increasing the risk of SIDS, low birth rates, future bronchial problems, to name a few. If tobacco smoking were banned in public places, she would not be in the position of having to give up her income.

Dave Pomeroy, Kansans for NonSmokers Rights (Attachment No.17) has the view that smoking is an activity which cannot be done safely in public places. He noted he rides a bike, but cannot ride it in a shopping mall, drives a car but has restrictions on where it is driven, because it can be hazardous to the public. Unfortunately, tobacco smoke does not stay away from non-smokers when smokers choose to smoke around them. He suggested that HB2136 should contain language that should include work-places where employees are trapped in ETS for 8 hours each working day. He urged support.

Written testimony only was provided by the following:

Jim Seels, Kansas Smoker's Rights, (Attachment No.18)

Jerry Slaughter, Kansas Medical Society, (Attachment No.19)

John McAllister, National Energy Management Institute, (Attachment No.20).

HEARINGS CLOSED ON HB 2136.

Chairperson Flower noted there are Committee minutes for February 8. Committee members have until 5:00 p.m. tomorrow (February 11) to contact the office of the Chair if there are corrections to these minutes. If there are none, the minutes will be considered approved.

Chair adjourned the meeting at 3:08 p.m.
The next meeting is scheduled for February 11, 1993.

VISITOR REGISTER

HOUSE PUBLIC HEALTH AND WELFARE COMMITTEE

DATE Feb. 10, 93

NAME	ORGANIZATION	ADDRESS
Linda Craig	Private Citizen	3100 SW 21 TERRACE TOPEKA 66614
ELIZABETH E. TAYLOR	KS TOB & CANDY DIST	TOPEKA
Tom Gilbert	KS. Tob & Candy Dist	Topeka
Brian Gilpin	Tobacco Free Kansas	Topeka
DICK TAYLOR	SELF	TOPEKA
DAVE POMEROY	KANSANS FOR NONSMOKERS RIGHTS	Topeka
Amy Laughlin	self	Lawrence
Larry C. Holcomb	Holcomb Environmental Services	Olivet, MI
Tonnie Furjanic	American Cancer Society	Topeka
Betty Dimes	American Cancer Soc	Topeka
George Lobb	Wichita - Sedgwick County Bd of Health	Wichita
Simon Turner	MBI Inc	Virginia (Fairfax)
Ron Hein	RJ Reynolds	Topeka
Barbara Leany	Self	Topeka
JAMES E. FLORY JR	SELF	Topeka
Ralph Tevis	Self	Topeka
GEORGE PUCKETT	KRHA	WICHITA & TOPEKA
Herbert A. Lewis	KINH	1548 S. 37th St. Kansas City, Ks.
Michelle Liester	Ks. Gov. Consulting	Topeka
Betsi Hoffman	Private Citizen	5821 W 25th - Topeka
Julie Francisco	KDHE	
Karla Marmet	KDHE	Topeka
Harry Harrington	League of KS Municipalities	Topeka

VISITOR REGISTER

HOUSE PUBLIC HEALTH AND WELFARE COMMITTEE

DATE Wed - 2-10-3

NAME	ORGANIZATION	ADDRESS
Tom Bruno	Bittenbender Assoc.	Topeka
ALAN ALDERSON	TOBACCO INSTITUTE	TOPEKA
John Leeper	Tobacco Institute	Kansas City
Rex Havey	Ks. State Bowling Prop.	Topeka
Sandra Strand	KINH	Lawrence
Adam Wilde	Dept. of Adm.	Topeka
KEN and VERNITA MITCHELL		
Charles J. Hecoley	Ks Oil Marketers Assn	Topeka

STATE OF KANSAS

HENRY M. HELGERSON, JR.
REPRESENTATIVE, EIGHTY-SIXTH DISTRICT
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WICHITA, KANSAS 67218-1221

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TOPEKA

HOUSE OF
REPRESENTATIVES

COMMITTEE ASSIGNMENTS
CHAIRMAN: SUBCOMMITTEE FOR HUMAN SERVICES
MEMBER: APPROPRIATIONS
INSURANCE
LEGISLATIVE POST AUDIT
JOINT COMMITTEE ON HEALTH CARE
LEGISLATIVE BUDGET COMMITTEE

HB 2223 February 10, 1993

Testimony Before the

House Public Health and Welfare Committee

by

Representative Henry M. Helgerson, Jr.

Madam Chairman and members of the Committee:

Now with the most recent EPA report, it is recognized that second-hand smoke is a class A carcinogen similar to asbestos and radon that poses both health and financial risks.

There are four major reasons why I believe this legislation should be passed.

First, we are setting a bad example to children, state employees and the general citizenry of Kansas by prohibiting smoking in most public areas but not in our own state capitol. We ban it in over 1500 schools, almost all state offices and our state office buildings. Most cities and counties have adopted smoking bans in public areas and offices. In fact, if it were not for a provision that allows state buildings an exemption from local ordinances, the capitol would be required to be non-smoking in public areas.

Second, our Capitol is a treasure, not only for its architecture, but for the

PH+W
2-10-3
Attach # 1A

murals on the wall. Smoking increases the damage done to our facility and increases our cost of maintenance.

A third reason is that we should do everything possible to limit and discourage smoking because of the additional health care costs.

Most people will grant that smoking causes cancer, more illnesses and more hospitalization to smokers. But for the first time I know of, we have information provided by our own state employees health plan that corroborate the cost. Smokers incurred 33% more hospital admissions than non-smokers.

According to the American Heart Association, passive cigarette smoke kills 53,000 Americans each year, making it the third leading preventable cause of death. This was based on studies done at the University of California - San Francisco where they established a link between passive smoke and the development of heart disease.

Finally, I just want to add that I believe it is everyone's right to breathe clean air. Now that my and your health is at risk because someone else chooses to smoke, I believe that we should further restrict smoking in state-owned buildings.

Thank you for your time.

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2-10-3
Attn. #1-A
pg 2 of 2

Coalition Members

American Cancer Society, Kansas Division

American Heart Association Kansas Affiliate, Inc.

American Lung Association of Kansas

Cancer Information Service

Dickinson County Council on Alcohol and Drugs, Inc.

Extension Human Development and Family Studies, Kansas State University

Governor's Office of Drug Abuse Programs

Group to Alleviate Smoking Pollution

Kansas Academy of Family Physicians

Kansas Association of Local Health Departments

Kansas Dental Association

Kansas Department of Administration

Kansas Department of Health and Environment

Kansas Department of Human Resources

Kansas Employer Coalition on Health

Kansas Health Foundation

Kansas Respiratory Care Society

Kansas State Board of Education

Kansas State Nurses Association

Kansans for Non-smokers Rights

National Council on Alcoholism

New Mondays Seminars

Preventative Cardiology, PA

Project Freedom

Smoky Hill Family Practice Residency Program

Stormont-Vail Regional Medical Center

Topeka-Shawnee County Health Department

University of Kansas Medical Center

Wichita-Sedgwick County Dept. of Community Health

Tobacco Free Kansas

900 SW Jackson, Room 1051, Topeka, KS 66612-1290 913/296-1200 FAX 913/296-1231

TOTAL BAN ON SMOKING IN THE STATE CAPITOL AND ALL STATE OWNED BUILDINGS AND OTHER TOBACCO-CONTROL LEGISLATION

FACT SHEET

ETS is a human lung carcinogen, responsible for approximately 3,000 lung cancer deaths annually in U.S. **nonsmokers.** There only 15 substances named as class A carcinogens, among these are asbestos and radon.

Secondhand smoke causes 30 times as many lung cancer deaths as all other regulated air pollutants combined.

Body fluids of nonsmokers exposed to cigarette smoke contain significant amounts of nicotine, carbon monoxide, and other evidence of passive smoking.

More that 90 % of Americans favor restricting or banning smoking in public places.

In 1991 Smoking-attributable illness cost Kansans $594 million.

Policies enacted to reduce exposure to secondhand smoke may encourage smokers to quit, thus **increasing their overall well-being** and **decreasing their susceptibility to cancer.**

Workers exposed to **secondhand smoke** on the job are **34 percent more likely to get lung cancer.**

The simple separation of smokers from nonsmokers within the same airspace will reduce, **but cannot eliminate,** the exposure of nonsmokers to secondhand smoke.

Of state employees, smokers incur 33% more hospital admissions and average 41% more hospital days than non-smokers. In 1991, the total medical claim payment averaged $280.62 more for smokers than for non-smokers.

More than **60% of Kansan adults** who work outside the home are **exposed to ETS in their workplace.**

82% of Kansans are willing to create a special purpose tax on items such as **cigarettes** and alcohol, in order to create a basic standard for all Kansans.

THE TOPEKA CAPITAL-JOURNAL
'In God we trust'
Peter W. Stauffer .....Editor and publisher
R. Joe Sullivan.....Executive editor
Michael Ryan .....Editorial page editor
January 31, 1993 Page 4-E

EDITORIALS

Smoke-filled rooms

With growing evidence of the deleterious effects of cigarette smoke on nonsmokers, restrictions on the use of tobacco products in public places are certain to expand.

For instance, there is a movement afoot to curb smoking at the Statehouse, where smoke fills the same air breathed by school children touring their Capitol.

In addition, federal lawmakers who led the push to ban smoking on domestic flights are targeting federal office buildings that include the White House and Capitol.

The signs are clear, even if the air is not: Smoke-free buildings are in our future.

The Environmental Protection Agency recently classified secondhand smoke as a carcinogen worse than radon or arsenic and comparable to asbestos. And, it should be noted, the nation is paying millions of dollars to remove asbestos from public buildings.

In contrast, smoke-free buildings can be had at little or no cost. In fact, eliminating the waste, the stench and the stains associated with smoking most likely would save governments money.

Government buildings, it can be argued, should lead the way toward clean indoor air. After all, those buildings are owned by everyone. In addition, many people entering those buildings are compelled to do so in order to transact business with the government.

Should they also be forced to breathe known cancer-causing agents?

DHW
2-10-93
Attm#11C

Snuffing Out Smoke in the Workplace

A Manager's Guide

Like a Kansas thunderstorm blasting across the prairie it is coming, and no one in its path will be spared. What started as an isolated shower is turning into a downpour that no sane manager dare avoid. Soon, probably sooner than you think, workplace smoking in Wichita and across the country will be banned.

At least that's what health care professionals and a lot of non-smoking workers are hoping. The dilemma for business owners and managers is how to ban smoking in their workplace successfully and profitably. There are no easy answers, but the winners in the high stakes battle against tobacco use stand to gain healthier, more productive employees and a positive impact on the bottom line.

Companies contacted by The Wichita Commerce Magazine gave a variety of reasons for instituting absolute no-smoking policies. For Wichita hospitals and medical clinics it is partly a question of image. How can a business dedicated to saving lives allow the use of a product that is a proven killer? For some manufacturers safety at the work site is a concern. Still others point to the overall health of their workforce.

Wichita smoking cessation specialist Sally Sheets says companies institute no-smoking policies for one reason, "It's simply good business because each smoker costs his company money."

The numbers supporting that claim are staggering. A study by professor William Weiss of Seattle University concludes that a smoker whose total payroll costs are $30,000 a year costs his or her employer an additional $5,620 compared with a non-smoking employee earning the same. The biggest share of that smoking cost, according to Weiss, is from time spent on smoking rituals. But absenteeism, medical care, disability, and early deaths figure prominently as well.

Wichita companies are buying into the no-smoking philosophy and are implementing change in various degrees.

The most aggressive no-smoking policy we found is at Kansas Gas and Electric Company. "No smoking, period," said Lyle Koerper, company spokesman. "It's a totally smoke-free work environment in KG&E buildings and vehicles, and since 1990 we quit hiring smokers altogether." So what have the results been? "I know our managers are very pleased with it (the policy)," said Koerper, "but as far as putting a specific dollar figure on how much we've saved in health care costs or increased productivity, that's hard to do."

Most Wichita companies don't take on the issue like KG&E. At the Wichita Clinic, management decided on a strategy of phasing in a no-smoking policy back in 1985. Human Resources Director Will Stricker recalls the results of an initial in-house poll on the subject. "Most workers we surveyed thought a smoke-free environment was a good idea, but they also didn't want to take away the rights of smokers."

Eventually, the board of directors thought it had to be done, the trick then was to not pit smokers vs. non-smokers and have employees implement the policy as much as possible. An eight member employee task force made up of smokers and non-smokers went to work getting educated about the effects of smoking. They came back with information about so-called "sidestream effects" of smoking, making believers out of many in the no-smoking philosophy. Cessation classes were offered and costs were reimbursed upon successful completion. Employees were paid bonuses to quit.

Slowly, restrictions on when and where smoking was allowed were phased in. Finally, the total no-smoking ban was laid down. "We never looked back," said Stricker, "it's a non-issue now. We're convinced it was the right thing to do." But at the Wichita Clinic, you can still smoke if you can brave the heat, cold or winds outside. Many times problems associated with smoking remain, even though there is a smoke-free work environment. That is where people like Sally Sheets come in.

Sheets has conducted smoking cessation programs at some 3,000 work sites over the past five years. She is convinced that taking a soft approach to the problem is a waste of time. Just 8% of smokers have come forward asking for help in quitting when the program in the workplace is voluntary.

"Presenting a mandatory cessation program on company time and at company expense is the first step," said Sheets. But the real key to a successful transition to smoke-free is providing smoking management skills to ALL managers and supervisors. This results in uniform enforcement of the ban. When tough enforcement techniques are

See SMOKING, page 26

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Attn: # 10

Smoking, from page 23

combined with behavioral training for all smokers, there's a dramatic reduction in the number of smokers. Those who continue to smoke become *positive participants* in the changes, as opposed to "targets" of the smoking ban.

The smoking cessation program conducted by Sheets through Addiction Management Systems Inc. of Toronto costs $175 per employee. AMS Inc. claims to have proposals before a half-dozen Wichita companies that are considering smoking cessation programs in the workplace.

But the push to end smoking in the workplace is not as easy as paying out money for smoking cessation programs. Smokers are fighting back making personal rights an issue.

Mack Spencer was furious when his bosses, the Sedgwick County Commission, (all non-smokers), voted unanimously to ban smoking in all but a few areas in county buildings and vehicles. "What difference does it make if I want to smoke? That's my business," said Spencer. We didn't elect these people to make laws telling us what we can or can't do with our own bodies. It's ridiculous." Others share his view.

"Just how far does the bosses' reach go when it comes to employees?," asks Walker Merryman, chief spokesman for The Tobacco Institute. TTI has been carrying the gauntlet for smokers rights for years, and says they'll continue to fight the question out in the courts and before state legislatures. "We're having a lot of success," said Merryman. "This year alone we passed legislation in 15 states that forbids discrimination against smokers."

Merryman says there is no hard proof that smokers are less productive or use more health care dollars. "The largest concentration of smokers are blue collar workers who tend to get hurt more often anyway. If employers want to cut health care costs, why not target people with children? They use the largest percentage of health dollars, not smokers."

But increasingly, smokers are finding themselves on the defensive, and employers are having a tougher time justifying even limited smoking areas in the workplace. "It's becoming much more of an issue with smokers and non-smokers in the workplace," says Mary Ann Oneslager, the American Cancer Society Director of Programs in Wichita. "I get at least two calls a day from companies wanting to know about our smoking cessation programs." The American Cancer Society and other non-profit health organizations provide such programs without charge.

But Oneslager says even with what she calls the overwhelming evidence that smoking is an invitation for health problems and higher costs of running a business, some business owners are resisting change. "We're getting down to the hard core smokers now," said Oneslager. "There are people who say. 'I own this business, I smoke, and I'm not going to change.'" The fight for the smoke-free workplace will not come easily. ■

Therapy, from page 24

employer, Acunet assigns a case manager to monitor the injured worker. A network of physicians, hospitals, and pharmacies work together to help reduce costs by 10 to 20%. HCA Wesley Director of Payer Marketing Brad Stephan says "there is a change in thinking and a realization that paying up front and watching what you pay for is in the long run more cost effective." The high cost of rehabilitating injured employees is forcing business to look at all the options available.

Maybe people like Sharon Clark provide the best example of why comprehensive occupational therapy programs are becoming more popular and accepted. "They don't push you here, but they strongly encourage you,"said Clark during a lunch break recently while undergoing therapy. "I'm learning things I'd never thought of before about taking care of myself at work and away from work. If I'd done this right away after getting hurt, I'd be back to work already." ■

Prevention, from page 25

medical management programs for dealing with work-related injuries. "While many companies have a person designated to be in charge of risk management, if that individual doesn't have a medical background, he may not be able to give managers complete feedback. Unless someone comes in to study why carpal tunnel problems, for instance, are occurring, how the problems are being treated and how long treatment is taking, the company may be spending more money than necessary," Sparks says.

While conducting work site assessments, Sparks will focus on everything from the wrist angle of a typist to dangerous noise and chemical levels. After he visits the workplace, he submits a written evaluation complete with prioritized recommendations. Despite the fact that his assessments vary considerably from situation to situation, his goal remains the same: "We (occupational medicine physicians) are working to stem this tide of occupational injury," he says.

The Sedgwick County Tag Office contacted Sparks because the county's risk management department had noticed an increase in workers' comp claims that cited repetitive motion disorders. The doctor's recommendations in that case included the redesign of counter space, employee exercise breaks and the scheduling of periodic in-house office assessments, according to Jo Hillman, office manager. The tag office, like all clients, had the option of adopting none, some or all of the suggestions.

Although no studies exist to bolster her estimate, Hillman expresses confidence that the implementation of a number of Sparks' recommendations have indeed helped prevent additional cases of repetitive motion disorders. "I think all of us are more aware of repetitive motions. We now have ways of recognizing and dealing with problem areas," she says.

Even though direct, measurable links between ergonomic work site improvements and reductions in health care problems are difficult to track, the idea that a happy, healthy, motivated employee is more productive is firmly ensconced in most businesses, including health insurance carriers. Blue Cross and Blue Shield of Kansas, for example, views ergonomic concerns as vital and conducts regular in-house work site assessments. Says Blue Cross spokeswoman Mary Betzen, "We see ergonomics as an issue of practicality and compassion." ■

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Attn. #10
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Tobacco Free Kansas

900 SW Jackson, Room 1051, Topeka, KS 66612-1290 913/296-1200 FAX 913/296-1231

TESTIMONY IN SUPPORT OF HB 2136 AND HB 2223

Brian Gilpin
Tobacco Free Kansas Coalition
5375 SW 7th Street
Topeka, KS 66606
(913) 272-7056

February 10, 1993

SECONDHAND SMOKE: DEADLY

A landmark report announced on Thursday morning, January 7, 1993 by the Environmental Protection Agency, confirmed what we have known for several years; that exposure to other people's cigarette smoke is more than just smelly and annoying; it's deadly.

The EPA's report designated environmental tobacco smoke (ETS) or secondhand smoke as a Group A carcinogen, a designation they reserve for the most dangerous cancer causers like asbestos. It is estimated that 53,000 nonsmokers die from secondhand smoke every year, including some 500 Kansans. (In 1990, a total of 3,935 deaths were attributed to smoking in Kansas. This represents 18% of all deaths in the state. In other words, almost one in every five deaths in Kansas is related to smoking. In 1991 smoking-attributable illness cost Kansans $594 million.)

Smokers voluntarily subject themselves to the negative health effects of smoking. However, nonsmokers are involuntarily exposed to secondhand smoke. Sadly, children are truly involuntary victims of secondhand smoke. They have no control over the conditions under which they live, attend school, or frequent public places, including our historic state house.

-more-

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Establishing tobacco-free environments in public places, including our state house, should be a public health priority in Kansas. We've spent millions of dollars removing asbestos from buildings because of the threat to the public health. Given the documented risk of secondhand smoke, how can we fail to take similar action to remove tobacco smoke from our buildings when such measures don't have to cost taxpayers a dime?

Designated smoking areas don't work, nonsmokers are still exposed. For example in the state house, the designated smoking areas are part of the general public areas and prohibits nonsmokers concerned with the known health risks of secondhand smoke from frequenting those areas. A truly designated smoking area would be one in which the area was removed from the general public areas and is seperately ventilated in order to prevent the dangerous toxins from being recirculated to all areas by the heating and cooling system.

Cigarette smoking in the presence of nonsmokers no longer can be defended as an issue of free choice or a protected right. Tobacco smoke hurts everyone, smokers and nonsmokers alike. We're all at risk. The right to breathe safely is more important than the privilege to smoke.

We appeal to you to act to protect Kansans from the dangers of secondhand smoke. The benefits to our health and safety will be immediate and for generations to come.

-end-

PH & WS
Attach #2
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2-10-93

middle of an interview of a com- deal of money, but it acts like a

Second-hand smoke narrows arteries in non-smokers

The Associated Press

MEMPHIS, Tenn. — Exposure to second-hand cigarette smoke significantly narrows the arteries of non-smokers, increasing their risk of heart disease, a researcher reported Thursday.

The study is the first to use ultrasound to examine arteries directly to look for the effects of second-hand cigarette smoke, said its principal author, George Howard of the Bowman Gray School of Medicine in Winston-Salem, N.C.

"The point is to get a more direct measure of the process" that leads to a heart attack, Howard said at the annual American Heart Association meeting on heart disease epidemiology.

Exposure to second-hand smoke is an established risk factor for lung cancer, but its role in heart disease has only recently become clear, researchers said.

Last year, a study in the American Heart Association's journal Circulation found that second-hand smoke caused an estimated 37,000 heart disease deaths per year among non-smokers in the United States.

The link between second-hand smoke and narrowing of the arteries — by virtue of a thickening of the artery walls — "is a strong effect," Howard said. "It's clear."

Howard said the researchers also found that the more hours per week a person was exposed to second-hand smoke, the narrower the arteries. Although that effect was smaller than the overall association, it helped give the researchers confidence they were correctly assessing the data, Howard said.

Also boosting their confidence in the findings was a consistent pattern when they compared non-smokers to smokers.

People who had never smoked and who said they were not exposed to second-hand smoke had the least artery narrowing. The degree of artery narrowing was greater in those exposed to second-hand smoke, greater still in people who had smoked but had quit, and highest in current smokers, Howard said.

Narrower arteries are more prone to clogging by cholesterol deposits and clots. Blockage of those arteries causes heart attacks and strokes.

Howard and other researchers cautioned that the study's findings were not yet conclusive.

"The data is just coming in," said Jeffrey Probstfield of the National Institutes of Health. "It's supportive of and consistent with a lot of other data suggesting environmental tobacco smoke is important. And I think a lot of people are realizing that."

Thomas A. Pearson of the M.I. Bassett Research Institute in Cooperstown, N.Y., noted that smoking is more prevalent in lower socioeconomic levels. Such people also have a heavier share of other heart disease risk factors including obesity, high-fat diets and lack of physical activity.

Further studies will have to separate the effects of those factors from the effects of second-hand smoke, he said.

Howard's study is part of a larger study involving 15,800 subjects in Minneapolis; Hagerstown, Md.; Jackson, Miss.; and Winston-Salem. The smoking study was based on assessments of 12,862 of the subjects, Howard said. The study is funded by the National Institutes of Health.

In another report, researchers used data from the four-city study to examine the effect of high-fat diets. They found, as expected, that high-fat diets led to greater narrowing of the arteries. But the effect of smoking "was somewhat larger than the effect of diet," Howard said.

Poll shows non-smokers worry about second-hand smoke

NEW YORK (AP) — Two in three Americans who never smoked regularly worry that exposure to secondhand cigarette smoke could cause serious health problems, especially cancer, according to an Associated Press poll.

The poll also found that 54 percent of Americans favor a complete ban on smoking in all public places. Most think that workplace smoking bans should be decided by employers and employees, not by law.

"The public is clearly sensitized to the health effects of secondhand tobacco smoke. I don't think that was the case five years ago," said Scott Ballin, a vice president of the American Heart Association and spokesman for the Coalition on Smoking or Health in Washington. The coalition is made up of the heart association, the American Cancer Society and the American Lung Association.

Nearly half the 1,000 American adults surveyed March 13 through 17 said they had never smoked regularly. Of the rest, 26 percent said they had smoked in the past week, and 28 percent called themselves former smokers.

The telephone poll, taken by ICR Survey Research Group of Media, Pa., has a margin of sampling error of plus or minus 3 percentage points.

Sixty-seven percent of those who had never smoked said they worried about the health effects of passive smoking. Of that group, 68 percent were worried about cancer, while 8.5 percent were worried about heart disease.

"I think we need to do more on the dangers of secondhand smoke and cardiovascular disease," Ballin said. Evidence linking secondhand smoke to heart disease is not as strong as that regarding lung cancer, but it is growing, he said.

Last year, an article in Circulation, a journal of the American Heart Association, estimated that passive smoking causes 53,000 deaths per year, including 37,000 from heart disease.

"People do not know nor do they understand about smoking and coronary disease. Even people who have had a heart attack don't understand," said Diane Becker, director of the Johns Hopkins Center for Health Promotion in Baltimore.

A draft Environmental Protection Agency report found that cigarette smoke causes cancer in nonsmokers and may be an important cause of bronchitis, pneumonia and asthma in children.

Support for a ban on smoking in public places came from 70 percent of people who had never smoked and 59 percent of former smokers.

Health advocates have pushed for laws restricting workplace smoking and have succeeded in many cities and towns.

The AP poll found that 36 percent favored such laws, while 63 percent thought workers and their employers ought to decide whether to allow smoking.

Among nonsmokers, 47 percent favored laws guaranteeing a smoke-free workplace and 51 percent said workers and employers should decide. Of the smokers in the poll, 81 percent said workers and their employers should decide.

The story you're telling hi doesn't always have a happy ending.

We, the undersigned, strongly encourage the members of the House of Representatives and the Senate to vote favorably in support of the bills that would limit and prohibit smoking. We suffer from chronic lung disease and support any legislation that will adversely effect the industry that contributed to our diseases.

Ila Woods
Thos Smith
Nancy Wilke
Duane Hamilton
Myrna Small
Edward M. Small
Barbara Boyd
Deanne Nicholson
Dixie Weems
W. H. McClanahan
Pam Doyle
Otha Baranyak
Don Silby
Dick Platz
Ron Johnson
Roy L. Bulkley
Willa Mavis
Eileen Jacoby
Wilma Wingfield
Myra Shaad

Roy Wood
Corene Hart
Theda Gideon

these individuals are members of the Second Wind Support Group at Stormont-Vail Regional Medical Center. these people have participated in Pulmonary Rehabilitation program at Stormont-Vail.

PH dtes
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3-16-93
Pg 6 & 6

State of Kansas
Joan Finney, *Governor*

Department of Health and Environment
Robert C. Harder, Secretary

Reply to:

Testimony Presented to

House Public Health and Welfare Committee

by

The Kansas Department of Health and Environment

HB 2136
HB 2223

House Bill 2136 proposes to decrease human exposure to Environmental Tobacco Smoke by banning smoking tobacco products in all public places, while House Bill 2223 proposes to ban smoking in the State Capitol and all state owned buildings.

The Environmental Protection Agency has designated environmental tobacco smoke (ETS) as a "class A" carcinogen, a classification reserved for only 15 substances, including radon and asbestos. According to the Environmental Protection Agency's report released January 7, 1993, Environmental Tobacco Smoke (ETS) as a human lung carcinogen, is responsible for approximately 3,000 lung cancer deaths annually in U.S. nonsmokers.

Exposure to ETS has also been linked to heart disease in non-smokers. The January , 1992 issue of Circulation, a journal of the American Heart Association concludes that passive smoking causes about 10 times as many deaths from heart disease as it does from cancer. These deaths contribute greatly to the estimated 53,000 annual deaths caused by passive smoking, which ranks as the third leading preventable cause of death in the U.S. today, following active smoking and alcohol.

In 1991, an estimated 3,888 Kansans died due to smoking related illnesses. This makes cigarette smoking the second leading cause of death, behind non-smoking related heart disease.

According to recent studies, body fluids of nonsmokers exposed to cigarette smoke contain significant amounts of nicotine, carbon monoxide, and other evidence of passive smoking. These substances appear in the segment of the population (more than 70%) who are choosing NOT to actively smoke, in order that the 25-30% of the population who chooses to smoke may continue to smoke in public places of their choice.

PHHW
2-10-93
Attm #3

According to a 1990 study conducted by the Kansas Department of Health and Environment, more than 60% of Kansas adults who work outside the home are exposed to ETS in their workplace. On-the-job exposure to secondhand smoke can be four times higher than in the home. Some workers are already exposed to substances that can cause lung disease. Secondhand smoke in the workplace can only increase the danger. Workers exposed to secondhand smoke on the job are 34 percent more likely to get lung cancer.

Kansans, like many Americans, continue to smoke despite the overwhelming evidence of the tremendous costs both to our well-being and our pocketbooks. Twenty-two percent of adults report that they smoke, and **nearly 1 out of every 4 Kansans between the ages of 35 and 64 are current smokers.** Smoking-attributable illness cost Kansans $594 million in 1991.

Of state employees, smokers incur 33% more hospital admissions and average 41% more hospital days than non-smokers. According to Blue Cross Health Insurance data on the Kansas Active Employee Group, the total medical claim payment in 1991 averaged $280.62 more for smokers than for non-smokers. (see attached graph)

In addition to the established smokers, over 65% of Kansas youths under 18 years of age indicated they had smoked cigarettes within the previous 30 days. It is estimated that 30 young people in Kansas start smoking everyday. If we add yesterday's 30 to today's 30 and tomorrow's 30, and so on; the numbers amount to an alarming 11,000 youth per year. By banning smoking in public places we can encourage these young people not to start this life-threatening habit.

The 1992 Research Supplement of Tobacco Control Journal examined the impact of workplace restrictions on the behavior of smokers. Smokers smoke fewer total cigarettes during a 24 hour period when smoking is banned at their workplace. Implementing a smoking ban together with an employer supported assistance with cessation effort results in an attempt to stop by a substantial proportion of smokers. Likewise, policies enacted to reduce exposure to secondhand smoke may encourage smokers to quit, thus increasing their overall well-being and decreasing their susceptibility to cancer and other smoking-induced diseases.

Recent surveys show from 80 to 90 percent of Americans favor restricting or banning smoking in public places. Numerous editorials in newspapers across the state are supporting the need for a smoking ban in public places. Federal Lawmakers are targeting federal office buildings, including the White House and Capitol building in their efforts to eliminate human exposure to tobacco smoke. Just last week, Hilary Clinton designated the White House as a smoke-free environment.

The Kansas Department of Health and Environment supports both of these bills which call for a ban on smoking tobacco products in public places and all state office buildings. Passage of these measures will help protect Kansas adults and chilren from exposure to a deadly environmental substance.

Testimony presented by: Paula Marmet, Director
Office of Chronic Disease and Health Promotion
February 10, 1993

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Attm#3
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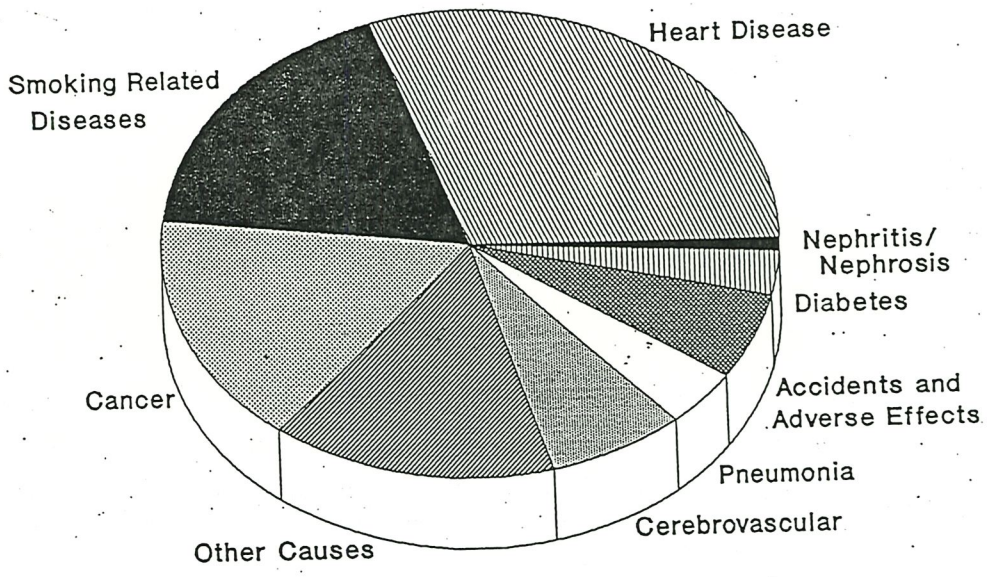
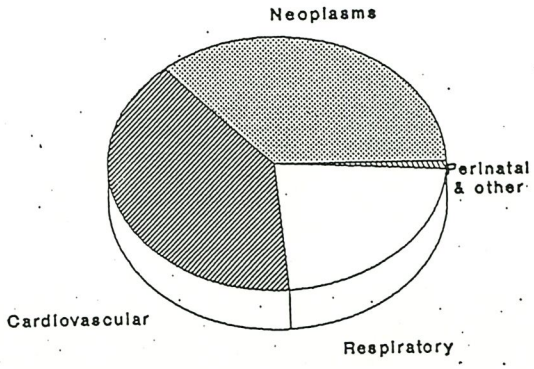
LEADING CAUSES OF DEATH
KANSAS, 1991

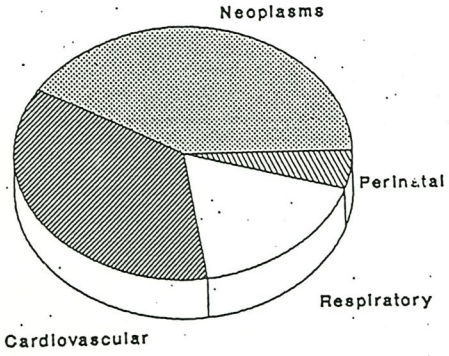


Smoking related deaths are not included in specific disease categories

SMOKING RELATED DEATHS AND YPLL BY CAUSE
KANSAS, 1991



Deaths



Years Potential Life Lost
YPLL

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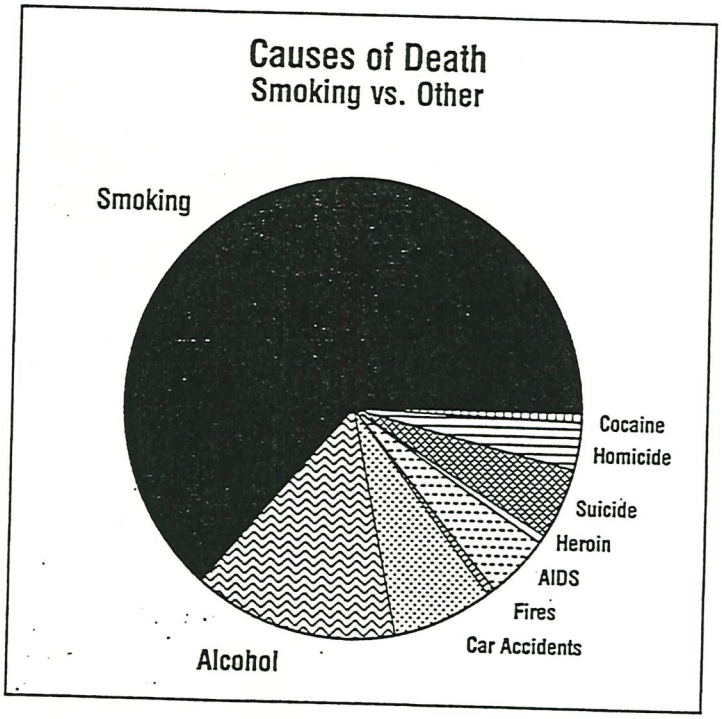
Smoking Kills More Americans Each Year Than Alcohol, Cocaine, Crack, Heroin, Homicide, Suicide, Car Accidents, Fires, and AIDS *combined*.

Approximate Number of Deaths:

Smoking	434,000[1]
Alcohol (Incl. drunk driving)	105,000[2]
Car Accidents (Incl. drunk driving)	49,000[3]
Fires	4,000[3]
AIDS	31,000[3]
Heroin and Morphine	2,400[4]
Suicide	31,000[5]
Homicide	22,000[5]
Cocaine and Crack	3,300[5]

[1]U.S. Centers For Disease Control, 1988 data
[2]U.S. Centers For Disease Control, 1987 data
[3]National Safety Council, 1989 data
[4]U.S. Centers For Disease Control, 1990 data
[5]National Center For Health Statistics, 1988 data



SmokeFree Educational Services, Inc., New York, NY

PHaW
2-10-93
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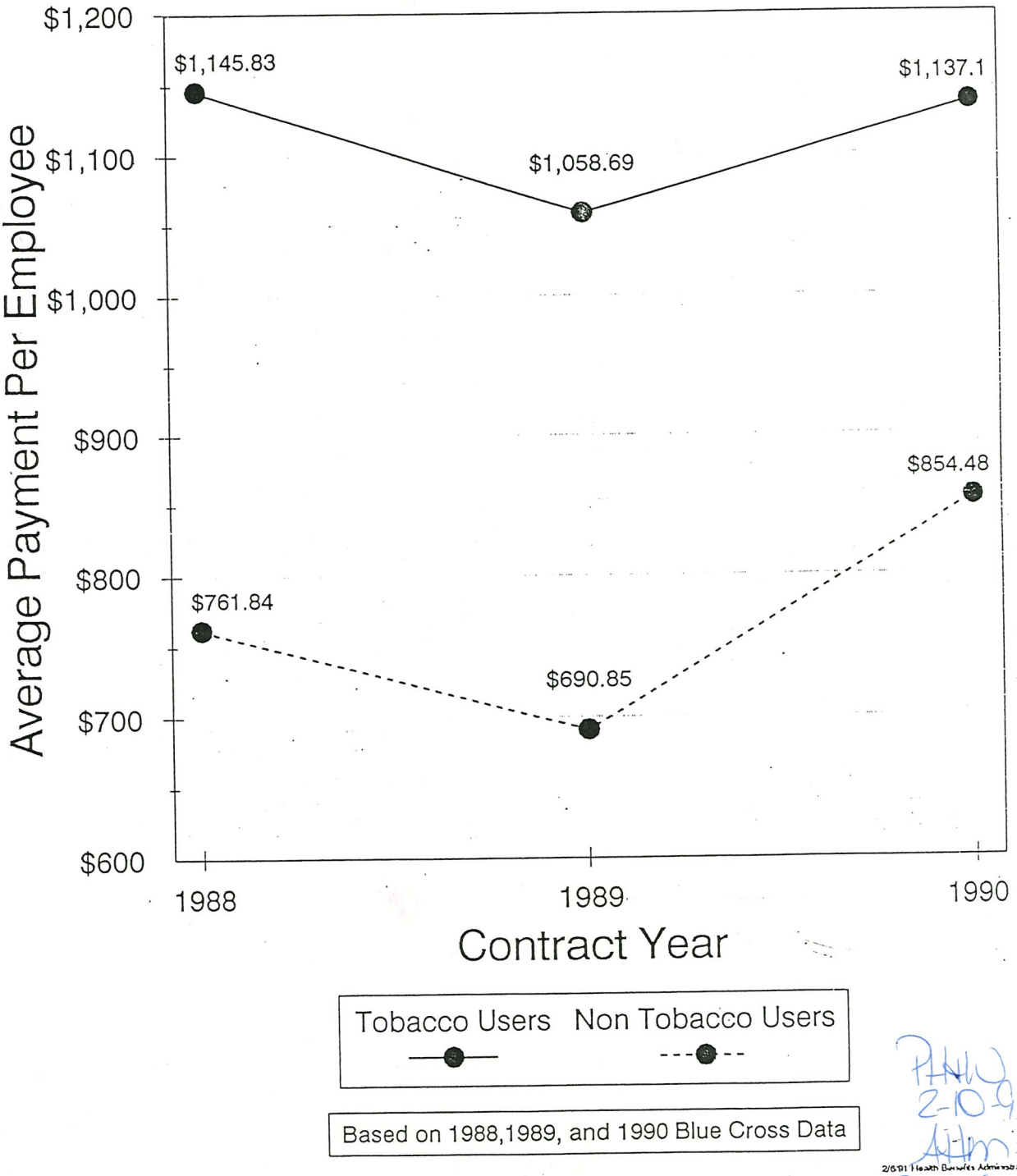
Pg. 4 of 5

STATE OF KANSAS ACTIVE EMPLOYEE GROUP
TOBACCO USERS VS. NON TOBACCO USERS
AVERAGE PAYMENT PER EMPLOYEE



Based on 1988,1989, and 1990 Blue Cross Data

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2/6/93 Health Benefits Administration
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nment International, Vol. 19, pp. 9-40, 1993

0160-4120/93 $6.00 +.00

INDOOR AIR QUALITY AND ENVIRONMENTAL TOBACCO SMOKE: CONCENTRATION AND EXPOSURE

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EI 9109-174 M (Received 10 September 1991; accepted 1 August 1992)

Environmental tobacco smoke (ETS) is often cited as a key factor in indoor air quality (IAQ) and public health. However, there are few studies which attempt to actually calculate the impact ETS has on IAQ or the doses of ETS one may receive from possible exposure in a variety of different settings. This paper reviews the data on indoor air published since 1980 and estimates the portion of various constituents which are produced by ETS. It can be observed that, in most instances, ETS has only a minor impact on IAQ. Retained doses of ETS particles are calculated for various exposure scenarios using respirable particle concentrations associated with ETS, time activity patterns, respiration rates and retention rates. Total doses range from 3-40 mg/y. This dose level does not seem to support the summary relative risk of 1.35 that has been claimed from meta-analyses of epidemiologic studies of spousal smoke exposure and lung cancer.

INTRODUCTION

Interest in indoor air quality (IAQ) is steadily increasing. The factors which affect IAQ and the health effects reportedly associated with it are the subject of intense debate. One of the IAQ issues which generates the most interest and emotion is environmental tobacco smoke (ETS) exposure and its reported health effects. ETS exposure has been claimed to be associated with health effects as diverse as childhood respiratory disease, lung cancer, and cardiovascular disease (Repace and Lowrey 1985; U.S. Surgeon General 1986; National Research Council 1986; Wells 1988; Glantz and Parmley 1991; USEPA 1990).

ETS is a complex mixture of many substances, the concentrations of which will vary with time, room ventilation, and proximity to the source. Since not all of its components are removed from the environment at the same rate, the concentrations of ETS components also vary in relation to each other over time. Because of this, it is difficult to accurately determine exposure to ETS and, further, whether the health claims are realistic in terms of this exposure.

Sterling et al. (1982) performed a comprehensive review of components of ETS measured in different environments and under different smoking conditions. Since that review was completed, there have been many changes in both indoor environments and analytical methodology. Because of this, a new review of the literature pertaining to indoor air quality and environmental tobacco smoke is appropriate.

This study assesses the literature on indoor air quality and ETS published since 1980. Using the data collected, it also attempts to determine what levels

RKW 2-10-93 Attn #4

of substances measured indoors may result from the presence of ETS and calculates some of the doses which may be expected from exposure to ETS.

INDOOR AIR AND ETS REVIEW

Methods

The literature search was restricted to work which took place in the U.S. and Canada and was published after 1980. There is important IAQ data being generated in European and other countries. However, potential differences in building age, ventilation types, room sizes and other factors may prevent data from other countries from being comparable to the U.S./Canadian data. This study limited the literature to the countries where the data were believed to be more homogeneous and essentially reviewed the literature published since the Sterling et al. (1982) review.

The following indoor air components were chosen for evaluation: respirable particulates (RSP); carbon monoxide; nicotine; nitrogen dioxide; formaldehyde; benzene; polycyclic aromatic hydrocarbons (PAH); and nitrosamines.

When it was obvious that structures and sampling protocol for data acquired in countries outside North America were similar, it was included with the USA/Canada data. In instances where relatively little information was available or the data from all countries were similar, information from other countries also was used.

The information was recorded in the following categories:

1. Homes—includes single family dwellings and apartments.
2. Offices, workplaces, and public facilities—includes offices, work sites, schools, universities, hospitals, retail stores, museums, libraries, clinics, grocery stores, laundromats, and public transportation stations.
3. Restaurants
4. Bars/taverns—includes betting shops, billiard parlors, bars, and taverns.
5. Public transportation—trains, buses, subway, and autos.

The data were selected from the literature using the following criteria:

If no mean was given, generally, the data were not reported in this document unless there were individual values given to make it possible to calculate a mean. If there were 10 or more samples and a median was given, the data were reported. Both arithmetic and geometric means are reported. If an arithmetic mean was given, it was used in any subsequent calculations.

If only one value was given (i.e., one sample) the data were not used because one sample at one point in time is not as representative of conditions as several samples at different points of time or for longer duration.

For respirable particulates, if the data were reported as total particulate matter (TPM), the data were not used. If the sample was PM 5.0 or less, the data were reported.

The data were recorded with a preference for gravimetric data on RSPs. When gravimetric, light scattering, and piezobalance data were all present, the gravimetric data were used. If data from only one of these three methods were present, these data were used.

This paper focuses upon the scientific literature pertaining to the quantification of indoor air quality. Hence, the papers reviewed are those that have measured levels of substances in indoor air. Odor may play a part in the acceptability of indoor air to occupants or visitors to any particular environment, but the evaluation of odor in offices is as yet somewhat subjective and poorly quantified. ETS clearly may influence odor perception in some situations, and the existing scientific literature on this matter has been reviewed. Because of both the scarcity of data on this issue and the subjectivity of the data that do exist, odor has not been considered as a quantified element in the data tabulated in this report.

Results

The results of the literature review on indoor air components are in Tables 1-8. Each table is a summary of one of the components reviewed. Units of measurement in the tables are reported the same as authors presented them in their studies. Conversion factors for ppm (parts per million) and ppb (parts per billion) to $\mu g/m^3$ are given where appropriate. Tables 9, 10, and 11 summarize the data for RSPs, CO, and nicotine. Nitrogen dioxide, formaldehyde, benzene, PAH, and nitrosamine data are summarized in the discussions.

DOSIMETRIC CALCULATIONS

Methods

The particle fraction of ETS is the portion on which the majority of the health claims concentrate. An estimate of the dose of ETS particles that persons

Table 1. Respirable particles (RSPs) measured under realistic conditions.

Author & Date	Country	Building Type	Occupancy	Ventilation	Sampling	Concentrations
Carson & Erikson (1988)	Canada	Offices (31)	≥ 2 people w/min. 1 smoker	Not Given	PASS Unit PM3.5 9 hr samples (8-5)	UVPM ($\mu g/m^3$) A. Mean 44 G. Mean 24 Range 6 - 426
Conner, et al. (1986)	USA	Homes (10) Restaurants (10)	Not Given	Not Given	Gravimetric & UVPM Personal Pump, 120-180 min. samples.	RSP ($\mu g/m^3$) / UVPM ($\mu g/m^3$) Homes, Range 17 - 86 / 1 - 8 Homes, A. Mean 58 / 4.2 Rest., Range 18 - 306 / 15 - 223 Rest., A. Mean 169 / 106
Conner, et al. (1989)	USA	Offices (10) Planes (5)	Not Given	Not Given	Gravimetric PM3.5 PASS Unit, 1-5 hr samples	RSP ($\mu g/m^3$) / UVPM ($\mu g/m^3$) Offices, Range 167 - 1088 / nd - 147 Offices, A. Mean 448 / 65 Planes, Range (Smoking Section) 33 - 119 / 20 - 106 Planes, A. Mean (Smoking Section) 72.6 / 66.6 Planes, Range (Non Smoking Sect.) 3 - 98 / 12 - 30 Planes, A. Mean (Non Smoking Sect.) 22 / 18.6
Coultas, et al. (1990a)	USA	Workplace(15)	Not Given	Not Given	Gravimetric Personal Monitors 6.5 hours, PM2.5	Males: Samples / Avg. RSP ($\mu g/m^3$) Hospital 2 / 66.15 Offices 2 / 56.7 Barber Shop 2 / 80.25 Restaurant 1 / 145.8 Retail Store 1 / 85.2 Females: Samples / Avg. RSP ($\mu g/m^3$) Hospital 3 / 35.33 Offices 3 / 70.37 Public Trans. 1 / 4.0
Coultas,et al. (1990b)	USA	Homes (10)	Not Given	Not Given	Gravimetric PM2.5 10 samples/home	RSP Means - 32.4 - 76.9 $\mu g/m^3$
Cousins & Collett (1989)	Canada	Schools (3) Portables (6)	Not Given	Not Given	Light Scattering PM5.0	RSP ($\mu g/m^3$) Old School / Ren. School / New School / Port. Class. Indoor 16 (11-22) / 13 (10-20) / 14 (10-17) / 17 (15-20) Outdoor 23 / 15 / 18 / 18
Crouse & Carson (1989)	USA	Offices(32) & Restaurants (36)	Not Given	Not Given	Gravimetric PM3.5	Geo. Mean / Range ($\mu g/m^3$) Offices RSP 61 / 11 - 279 UVPM 47 / 11 - 84 Restaurants RSP 111 / 16 - 366 UVPM 31 / 10 - 194
Crouse, et al. (1988)	USA	Restaurants (37)	Not Given	Not Given	Gravimetric PM3.5 1 Hour Sample	Geo. Mean / Arith. Mean / Range ($\mu g/m^3$) RSP 62 ± 2.2 / 80.8 / 16 - 221 UVPM 26.1 ± 1.9 / 34.1 / 15 - 168

Table 1. Continued.

Daisey, et al. (1989)	USA	Homes (7)	Not Given	0.13-0.89 ACH	Gravimetric w/ Cyclone, 48 hr samples	House # / Indoor / Outdoor (+ = Woodburning) 102 + 37.5 / 24 - 30.4 / 13.8 106 + 33.3 / 30.9 - 57.7 / 7.2 108 + 36.6 / 38.4 - 27.6 / 27 203 + 19.7 / 32.4 - 20.3 / 4.5 204 + 35.4 / 10.5 - 27.3 / 9.6 208 + 47.6 / 19.9 - 29.9 / - 300 + 60.1 / - - 35.6 / - Mean - Woodsmoke 32.7
Eudy, et al. (1987)	USA	Restaurant	Not Given	Not Given	Gravimetric PM3.5 4 hr samples, 12 samples/48 hr run	RSP 5 - 48 hour sample runs Range 0 - 105 $\mu g/m^3$ A. Mean 29.3 $\mu g/m^3$
First, (1983)	USA	Public Places	Various	Not Given	Piezobalance	Site / Avg. Conc. ($\mu g/m^3$) Chamber1 300 - 1 cig. smoked Chamber2 290 - 1 cig. smoked School cafeteria1 20 - no smokers School cafeteria2 40 - 2-3 smokers Tavern1 400 - 1-5 smokers Tavern2 660 - 2-3 smokers Tavern3 570 - mostly 1 smoker Bus Terminal 110 - 50-100 people, 1-5 smokers Bus Terminal (outside) 70 Fast Food Restaurant 150 - 1-3 smokers during sampling Sm. Sitdown Rest.1 250 - 15 diners, 4 smokers Sm. Sitdown Rest.2 260 - 23 diners, 1 smoker
Georghiou, et al. (1989)	Canada	Ice Arena	Varied	Not Given	PM10 Indoor Sampling Impactor, 2.5 hr samples 10 games	Range ($\mu g/m^3$) / A. Mean ($\mu g/m^3$) Smoking Allowed 17 - 680 / 440.75 (n=4) Smoking Restricted 187 - 426 / 302.57 (n=7)
Grimsrud, et al. (1990)	USA	Office Buildings (40)	Not Given	Not Given	Gravimetric PM3.0 3-20 sampling sites/ building	Concentration ($\mu g/m^3$) Arithmetic Mean 30.0 Geometric Mean 24.0 Range 5 - 86
Hedge, et al. (1990)	USA	Office Buildings (2)	Not Given	Not Given	Piezobalance, Gravimetric PM2.5, UVPM	Area / Method / Data ($\mu g/m^3$) AM / PM Building (NS) Piezobalance 20 10 Office (Restricted S) Piezobalance 40 40 Smoking Area w/filter Piezobalance 110 140 Building (NS) Gravimetric N/A N/A Office (Restricted S) Gravimetric 200 300 Smoking Area w/filter Gravimetric 350 400 Building (NS) UVPM 0 0 Office (Restricted S) UVPM 9.0 7.0 Smoking Area w/filter UVPM 120 185

Table 1. Continued.

Hollowell and Miksch 1981	USA	Office (1)	Not Given	Not Given	12 Hours	"Particles" - - - 31 $\mu g/m^3$ Avg.
Hosein, et al. (1985)	Canada	Homes	Not Given	Not Given	Gravimetric (RSP) 24 hr. samples	RSP ($\mu g/m^3$, Geometric Mean) AC / No AC Smoke (n=11) 80.5 (n=25) 70.11 No Smoke (n=4) 34.3 (n=11) 32.5 Carpet / No Carpet Smoke (n=28) 76.6 (n=8) 70.2 No Smoke (n=9) 38.7 (n=7) 53.7 Hot Water / Forced Air Smoke 84.8 57.1 No Smoke 66.7 37.7
IT Corp. (1987)	USA	Restaurants (36) Offices (38)	Varied	Not Given	Gravimetric PM3.5 PASS Unit 1 Hour Samples	RSP ($\mu g/m^3$) / UVPM ($\mu g/m^3$) Offices Range nd-375 nd-108 Offices A. Mean 114 28.3 Restaurants Range nd-417 nd-127 Restaurants A. Mean 120 33.2
Leaderer, et al. (1990)	USA	Homes (394)	Not Given	Not Given	Gravimetric PM2.5	Source / n / Suffolk / n / Onondaga ($\mu g/m^3$) None 30 17.3 45 14.1 W 15 18.1 16 19.1 (W = Woodstove) K 7 22 4 21.2 (K = Kerosene) S 61 49.3 80 36.5 (S = Smokers) KW 4 19.7 SW 29 38 31 33.9 SK 23 61.4 4 35.3 SKW 6 30.3 4 28.5 Outdoor 19 16.9 36 15.8
Lofroth, et al. (1989)	USA	Tavern (1)	5 - 25 180 m^3 Smoking Allowed	Not Given	Gravimetric TSP & Piezobalance	First Study (3 hr) / Second Study (4 hr) Indoor / Outdoor / Indoor / Outdoor TSP 470 nd 390 nd Piezobalance 420 < 50 320 40
McCarthy, et al. (1987)	USA	Homes (68S, 13NS)	Not Given	Not Given	Gravimetric (RSP) Personal & Area Samples (24 hr)	Mean / Median / Range (All: $\mu g/m^3$) Personal (NS) 29.4 27.2 21.6-39.8 Personal (S) 56.2 52.6 18.0-116.3 Home (NS) 30.9 25.6 16.6-77.1 Home (S) 54.6 55.6 --- Personal Samples on Children (8-11 yr old)
Miesner, et al. (1988)	USA	Public Places, Offices (19)	Varied	Varied	Gravimetric PM2.5 3-16 Hours	Mean RSP ($\mu g/m^3$) NS Areas (n=33) 14 Smoking Areas (N=7) 34.5 Trans. Facility (n=4) 64 (Subways or Bus)

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Table 1. Continued.

Miesner, et al. (1989)	USA	Public Bldgs (21)	Not Given	Not Given	Gravimetric PM2.5	

Samples		Range ($\mu g/m^3$)	A. Mean ($\mu g/m^3$)
4	Library (NS)	5.8 - 12.8	9.08
4	High School (NS)	12.5 - 109.4	41.9
2	Museum 1 (NS)	6.5 - 11.0	8.75
2	Museum 2 (NS)	nd - 12.9	6.45
4	Hospital (NS)	14.5 - 23.3	17.35
2	Hospital (S)	20.1 - 52.5	36.3
4	Clinic (NS)	nd - 17.3	9.3
1	Clinic (S)	119.1	119.1
2	Groc. Store (NS)	11.9 - 14.0	12.95
1	Laundromat1 (NS)	17.2	17.2
1	Laundromat2 (NS)	24.3	24.3
2	Bar/Rest.1 (S)	36.3 - 107.3	71.8
2	Bar/Rest.2 (S)	133.1 - 140.9	137
3	Bar 3 (S)	30 - 78.3	59
2	Subway St.1 (NS)	91.7 - 157.3	124.5
2	Subway St.2 (NS)	55.1 - 66.5	60.8
1	Bus Station (NS)	43.3	43.3
2	Office Bdg1 (S)	16.2 - 18.6	17.4
1	Office Bdg2 (NS)	15.8	15.8
2	Office Bdg3 (NS)	17.3 - 18.2	17.75
3	Office Bdg4 (S)	26 - 80	44.73
2	Office Bdg4 (NS)	15 - 15.2	15.1
1	Office Bdg5 (S)	520.8	520.8
4	Office Bdg5 (NS)	11.1 - 20	14.83
2	University (S)	114 - 196	155
2	University (NS)	5.6 - 44.3	24.95

Millar (1988)	Canada	Office Buildings (2)	Not Given	Not Given	Piezobalance Pre and 1yr Post smoking ban	

Floor	Building A	Floor	Building B
7th Pre	30 $\mu g/m^3$	3rd Pre	35 $\mu g/m^3$
9th Pre	28	15th Pre	47
7th Post	22	3rd Post	18
9th Post	22	15th Post	25

Ogden and Maiolo (1989)	USA	Homes (2) Auto (1) Dep't Store (1) Billiard Parlor (1)	Not Given	Not Given	Gravimetric PM3.5 Personal Pumps 2-8 hr samples	

	Sample Duration	No. of Cigs.	Conc. ($\mu g/m^3$) RSP	Solanesol
Billiard Parlor	2 hr	34[a]	355	12.8
Home	4 hr	6[b]	187	6.4
Home	4 hr	6[b]	212	6.6
Dep't Store	4 hr	0	55	ND
Automobile	8 hr	0	18	ND

[a]Actual Count, 30 cigs., 4 cigars.
[b]Kitchen only.

Oldaker, et al. (1990)	USA & Canada	Restaurants & Offices, 4 cities	Min. 2/off. w/ 1 smoker	Not Given	Gravimetric PM3.5 PASS Unit, Sampled during lunch & dinner hours.	

	Offices ($\mu g/m^3$)	Restaurants ($\mu g/m^3$)
RSP Range	(n=131) 0 - 1,088	(n=83) 0 - 685
RSP Mean	126	126
UVPM Range	(n=125) 0 - 287	(n=82) 0 - 184
UVPM Mean	27	36

Oldaker, et al. (1988)	USA	Offices & Restaurants	Not Given	Not Given	Gravimetric PM3.5

		RSP ($\mu g/m^3$)	UVPM ($\mu g/m^3$)
Offices (n=45)	GM	95	(n=43) 24
	AM	107	33
	Range	7-258	2-170
Restaurant (n=47)	GM	175	(n=49) 47
	AM	199	61
	Range	57-658	7-163

Table 1. Continued.

Ozkaynak, et al. (1990)	USA	Homes (9)	18 participants	0.2 -0.8 ACH	Gravimetric PM2.5 Stationary & Personal Samples	See below
Proctor (1989)	UK	Offices (10) Train Comp.(20)	app. 75%	Mechanical	Gravimetric PM3.5 PASS Unit, 1 Hr Samples	See below
Proctor, et al. (1989b)	UK	Office (1)	26 m^2/ person	Not Given	Gravimetric PM3.5 10 sites sampled 5 times each	See below
Quackenboss, et al. (1989a)	USA	Homes (98)	Not Given	Not Given	Gravimetric PM10 & PM2.5	See below
Quackenboss, et al. (1991)	USA	Homes (200)	Not Given	Not Given	Gravimetric PM2.5 2 weeks of sampling	See below
Santanam, et al. (1990)	USA	Homes (280) 70S, 70NS each city	Not Given	Not Given	Gravimetric PM2.5 1 week samples	See below
Sheldon, et al. (1988a)	USA	Home for Elderly (2)	Not Given	Not Given	Dichotomous Impactors < 2.5μm	See below

Ozkaynak, et al. (1990)

	N	Average	St. Deviation	Range - μg/m³
Indoors	230	37.31	24.27	6.97-168.82
Personal	52	75.09	46.82	19.90-240.56
Outdoor	101	42.72	23.97	8.98-116.87

Proctor (1989)

(μg/m³)	RSP Range	RSP Mean	UVPM Range	UVPM Mean
Offices(S)	33-260	103	.5-75	23
Office(NS)	29-240	90	1-17	8
Trains (S)	70.8-325	216	13-110	59.8
Trains (NS)	63.3-450	186	9-105	33

Proctor, et al. (1989b)

	RSP (μg/m³)	UVPM (μg/m³)
S Mean -	103	23
Median -	91	24
NS Mean -	90	8
Median -	71	8.8

Quackenboss, et al. (1989a)

Smoking	Evap. Cool.	n	PM2.5 (μg/m³)	n	PM10 (μg/m³)
	Yes	20	8.8	20	21.0
No	No	25	20.3	23	38.4
	Total	45	15.2	43	30.3
	Yes	10	19.3	10	33.9
1-20/day	No	16	32.3	17	53.4
	Total	26	27.3	27	46.2
	Yes	8	36.2	9	47.4
>20/day	No	9	82.7	9	102.5
	Total	17	60.8	18	75.0

Quackenboss, et al. (1991)

	Smokers at Home		No Smokers at Home	
Season[a]	N	Median μg/m³	N	Median μg/m³
Summer	49	20.5	50	8.9
Spring/Fall	39	20.1	37	10.6
Winter	24	35.7	26	13.4

[a]Seasons: Summer = May - September
Spring/Fall = March, April, October, November
Winter = December - February

Santanam, et al. (1990)

Steubenville (RSP μg/m³)

Winter		Summer	
S Homes	NS Homes	S Homes	NS Homes
43.57	19.54	49.85	29.5

Portage (RSP μg/m³)

Winter		Summer	
S Homes	NS Homes	S Homes	NS Homes
34.6	14.8	24.9	13.9

Sheldon, et al. (1988a)

RSP <2.5μm (μg/m³) Mean of 3 - 24 Hour Samples

	Home #2	Home #1
Apartment (S)	89	39
Commons Area	16 (smoking observed)	30 (smoking lounge)
Apartment (NS)	9	9
Outdoors	4 (1 24 hr sample)	10

Table 1. Continued.

Spengler, et al. (1985)	USA	Homes Offices Workplace (Non-office)	Not Given	Not Given	Gravimetric PM2.5	Building Type / Smoking ($\mu g/m^3$) / Non-smoking ($\mu g/m^3$) Homes N = 80 / 186 A. Mean 74 / 28 Offices N = 31 / 80 A. Mean 67 / 24 Workplace N = 9 / 6 (Non-office) A. Mean 50 / 23
Spengler, et al. (1987)	USA (6 cities)	Homes App. 300	Not Given	Not Given	Particle Sampler PM2.5 Week Long Samples	Range of Means - Homes Non Smoking 15 - 35 $\mu g/m^3$ Smoking 35 - 75 $\mu g/m^3$ Homes w/smokers 30$\mu g/m^3$ > Homes w/o smokers (Mean)
Sterling & Mueller (1988)	Canada	Office Building (2)	Not Given	Mechanical/ Re-circulated Air Pass. Vent/No Re-circulation	Light Scattering, Digital Dust Counter < 5 μm	# Samples / RSP ($\mu g/m^3$) Cafeteria (S) 6 / 102.5 Cafeteria (NS) 6 / 64.5 Offices (NS) 8 / 6.0 Offices (NS) 2 / 7.0
Sterling, et al. (1988)	USA & Canada	Offices	Not Given	Not Given	?	"Particles" ND - 2.7 mg/m^3 (0.04 median) 85 samples
Thomas, et al. (1989)	USA	Industrial Cafeteria	30 ± 9 560 m^3	8.8 ACH 2900 cfm OA, 2500 cfm RA	Gravimetric PM3.5 2 hrs/day for 14 Days (Lunchtime)	Lunchtime ($\mu g/m^3$) / Background ($\mu g/m^3$) RSP 60 ± 50 / 10 ± 10 UVPM 54 ± 33 / < 1 (Avg. Smoking Rate During Sampling was 26 ± 6 cig/hr)
Turner, et al. (1991)	USA	Offices (585)	126.5 ft^2/ person	Not Given	Piezobalance	N / RSP ($\mu g/m^3$) means Smokers 331 / 46.37 Non smokers 254 / 20.11 Total 585 / 34.97
Weschler and Shields (1989)	USA	Phone Switching Office (1)	Not Given	Not Given	Gravimetric PM2.5 1 week samples	Week / Indoors ($\mu g/m^3$) / Outdoors ($\mu g/m^3$) Apr. 7-14 0.85 / 7.41 Apr. 14-21 1.22 / 10.33 Apr. 21-28 3.05 / 17.85 Apr. 28 - May 5 0.67 / 7.80 May 5-12 3.50 / 16.62 May 12-19 4.12 / 17.59 May 19-26 2.41 / 12.40 May 26 - June 2 3.12 / 20.24
Yocom, (1982)	USA	School, Homes (1) (2)	Not Given	(See Results)	Resp. Part. Matter PM2.5	RPM @ Elementary School ($\mu g/m^3$) Vent. (m^3/h/person) / Indoors / Outdoors 10.8 / 19.0 / 26.3 9.1 / 11.7 / 15.3 2.5 / 15.5 / 26.3 RPM in Home Pre & Post Energy Efficient Retrofit Pre: Indoor / Outdoor; Post: Indoor / Outdoor Home 1, S 31 / 10 / 36 / 11 Home 1, NS 9 / 14 / 8 / 13 Home 2, NS 12 / 9 / 10 / 10

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Table 2. Carbon monoxide (ppm) measured under realistic conditions (Conversion factor: 1ppm = 1.15 mg/m³).

Author & Date	Country	Building Type	Occupancy	Ventilation	Sampling	Concentrations/Comments
Carson & Ericson (1988)	Canada	Offices (31)	≥2 people w/min. 1 smoker	Not Given	Electrochemical Detector in PASS Unit, 1 sample/ minute	A. Mean: Indoor 1.9, Outdoor 1.9 G. Mean: 1.3, 1.2 Min.: <.1, <.1 Max.: 8.7, 5.8 No. of Offices: 28, 21
Cousins & Collett (1989)	Canada	Schools (3)	Not Given	Not Given	Electrochemical Analyzer	CO (ppm): Old School / Renovated School / New School / Portables A. Mean: 1.3 / 1.1 / 0.9 / 0.9 Range: 1.0-1.8 / 0.7-1.5 / 0.7-1.1 / 0.8-1.0 Outdoor: 2.1 / 11.5 / 1.1 / 1.1
Crouse, et al. (1989)	USA	Offices (30) Restaurants (30)	Not Given	Not Given	PASS Unit, Electrochemical Detector	N / Range (ppm) / A. Mean (ppm) Offices-Outdoors: 29 / 0.2-7.2 / 2.8 Offices-Indoors: 29 / 0.6-7.1 / 2.5 Restaurants-Outdoors: 31 / 0.2-9.2 / 3.4 Restaurants-Indoors: 31 / 0.4-12 / 5.0
Crouse, et al. (1988)	USA	Restaurants (36)	Not Given	Not Given	PASS Unit	N / Range / G. Mean / A. Mean / St. Deviation CO (ppm): 36 / 0.9 - 6.3 / 2.4 / 2.6 / 1.5
Eudy, et al. (1987)	USA	Restaurant	Not Given	Not Given	Electrochemical Analyzer, Sample every 10 mins. during 48 hr runs	CO (5) 48 Hour Sampling Runs Range: 0 - 16 ppm A. Mean: 4 ppm
First (1983)	USA	Public Places	Various	Not Given	Ecolyzer	Site / Avg. Conc. (ppm) Chamber1: 2.0 - 1 cig. smoked Chamber2: 1.5 - 1 cig. smoked School cafeteria1: 1.0 - no smokers School cafeteria2: 0.5 - 2-3 smokers Tavern1: 8.0 - 1-5 smokers Tavern2: 8.0 - 2-3 smokers Tavern3: 7.0 - mostly 1 smoker Bus Terminal: 3.5 - 50-100 people, 1-5 smokers Bus Terminal (outside): 2.0-2.5 Fast Food Restaurant: 5.0 - 1-3 smokers during sampling Sm. Sitdown Rest.1: 6.0 - 15 diners, 4 smokers Sm. Sitdown Rest.2: 6.5 - 23 diners, 1 smoker
Flachsbart, et al. (1987)	USA	Car (8) Bus (4) Train (3)	Not Given	Not Given	Electrochemical Detector No Smoking	N[a] / Range of Means (ppm) / A. Mean of means (ppm) Automobile: 213 / 8.8 - 22.3 / 11.6 Bus: 35 / 3.7 - 10.2 / 6.0 Train: 8 / 2.0 - 5.2 / 2.88 [a]N=number of trips
Hedge, et al. (1990)	USA	Office Building (2)	Not Given	Not Given	Direct Reading Interscan 4000 Hourly Samples	A. Mean (ppm): AM / PM Smoking Prohibited: 0.0 / 0.0 Smoking Restricted (Office): 2.5 / 1.7 Smoking Restricted (Office with des. smoking area w/LACS[a]): 2.8 / 2.6 [a]Local Air Cleaning System

Table 2. Continued.

IT Corp. (1987)	USA	Offices (38) Restaurants (36)	Varied	Not Given	Electrochemical Detector, sampled each min. for 60 min.	Offices: Range (ppm) 0.5 - 6; A. Mean (ppm) 1.9. Restaurants: Range (ppm) 0.4 - 9; A. Mean (ppm) 3.1
Lofroth, et al. (1989)	USA	Tavern	5-25 people 180 m^3	Not Given	Electrochemical Detector	First Study (3hr): Indoor 4.4 mg/m^3, Outdoor < 1 mg/m^3. Second Study (4hr): Indoor 4.8 mg/m^3, Outdoor 1-2 mg/m^3
Mumford, et al. (1990)	USA	Mobile Homes	Not Given	0.5 ACH	SPE CO Detectors	N[a] Kerosene Heat On: A. Mean 30, 7.4 ppm; Maximum 30, 11.5 ppm. N Kerosene Heat Off: A. Mean 37, 1.5 ppm; Maximum 37, 1.5 ppm. [a]N=Number of sampling days or number of samples analyzed.
Proctor, (1989)	UK	Offices (10) Train Comp.(20) (10S, 10NS)	Not Given app. 75%	Mechanical Not Given	Electrochemical Detector, 1 sample/minute	(ppm): Offices(S) CO Range 0.5 - 5, CO A. Mean 1.4; Office(NS) 0.7 - 4, 1.2; Trains (S) 1 - 2.2, 1.6; Trains (NS) 0.5 - 2.9, 1.3
Proctor, et al. (1989a)	UK	Betting Shops (6)	Not Given	Not Given	Electrochemical Detector	Indoor Smoking N 11, Range (ppm) 3.6-9.4, A. Mean 5.1; Indoor N-Smoking 2, 2.8-3.4, 3.1; Outdoor 16, 2.8-9.0, 4.4
Proctor, et al. (1989b)	UK	Office Building (1)	26 m^2/person	Not Given	Electrochemical Detector, five 1 hr continuous samples	Smoking Mean - 1.4 ppm; Median - 1.1 ppm. Non smoking Mean - 1.2 ppm; Median - 1 ppm
Sterling & Mueller (1988)	Canada	Office Buildings (2)	.73-1.8/10m^2	1)Mechanical Air Recirc. 2)Natural, No Recirc.	Electrochemical Analyzer, 3-4 min. samples, 6/location	Smoking Cafeteria Building(s) 1&2, A. Mean (ppm) 3.9; Non Smoking Cafeteria 1&2, 2.6; Non Smoking Offices 1, 1.8; Non Smoking Offices 2, 1.35
Sterling, (1988)	Canada	Office Building	.79/10m^2	Forced Air; recirculation Min. 20 cfm/ person fresh air	Electrochemical Analyzer, 3-4 min. samples, 3/location	A. Mean (ppm): Smoking Prohibited 2.1; Smoking Permitted 2.5; Designated Smoking 4.2
Sterling, et al. (1988)	North Am.	Offices	Not Given	Not Given	Not Given	CO (ppm) N 241, Range ND - 245, Median (ppm) 2.65
Thomas, et al. (1989)	USA	Industrial Cafeteria	30±9 people 560 m^3	8.8 ACH 5,400 CFM	Electrochemical Sensor, 120 samples/day for 12 days	Average Concentration (ppm): Lunchtime 0.9 ± 0.4; Background 0.6 ± 0.2
Turner, et al. (1991)	USA	Offices (585)	126.5 ft^2/ person	Not Given	Electrochemical Detector, 10 readings/hour.	Smoking N 331, CO (ppm) A. Mean 3.40; Non Smoking 254, 3.13; Total 585, 3.29
Yuill & Comeau (1989)	Canada	Homes (76)	Not Given	0.29 ACH (0.0-1.35)	CO instrument	Living Room N 76, A. Mean (ppm) 0.7, Range (ppm) 0.0 - 4.0; Basement 69, 0.7, 0.0 - 4.0; Bedroom 73, 0.4, 0.0 - 3.0

Table 3. Nicotine measured under realistic conditions.

Author & Date	Country	Building Type	Occupancy	Ventilation	Sampling	Concentrations/Comments
Chuang, et al. (1988)	USA	Homes (8)	Not Given	Not Given	Pump w/XAD-4 Sorbent 2 - 8 hr samples in living room	Home # 1NS 2S 3S 4S 5S 6S 7NS 8NS S NS Nicotine 0.17 15 1.7 29 45 4.1 0.02 0.06 19 0.08 ($\mu g/m^3$)
Coultas, et al. (1990a)	USA	Workplace (15)	Not Given	Not Given	Personal Pump w/ Sodium bisulfate filter, 6.5 hr samples	Males — n — A. Mean ($\mu g/m^3$) Hospital 2 28 Offices 2 4.85 Barber Shop 2 8.85 Restaurant 1 45 Retail Store 1 6.9 Females Hospital 3 22.7 Offices 3 33.97 Public Trans. 1 0.0
Coultas, et al. (1990b)	USA	Homes (10)	Not Given	Not Given	Pump w/Sodium Bi-sulfate filter, 10 samples/home	Mean Range 0.6 - 6.9 $\mu g/m^3$ (100 samples)
Crouse, et al. (1988)	USA	Restaurants (37)	Not Given	Not Given	PASS Unit w/XAD-4 Sorbent, 1 hr sample	n — Range ($\mu g/m^3$) — A. Mean ($\mu g/m^3$) — G. Mean ($\mu g/m^3$) Restaurants 37 1.6 - 34.7 8.6 5.3 ± 2.4
Crouse & Carson (1989)	USA	Offices (32) Restaurants (36)	Not Given	Not Given	PASS Unit w/XAD-4 Sorbent	Offices ($\mu g/m^3$) — Restaurants ($\mu g/m^3$) G. Mean 3.8 4.1 Range 1.2 - 24.3 1.0 - 36
Crouse & Oldaker (1990)	USA	Restaurants (21)	Not Given	Not Given	PASS Unit & Personal Pump w/XAD-4 Sorbent Min. 1 hr sample for four months.	PASS Unit — Personal Pump Mean ($\mu g/m^3$) 6.3 4.3 Median 4.2 2.9 Range 0.3 - 24.8 0.3 - 24
Eudy, et al. (1987)	USA	Restaurant	Not Given	Not Given	Pump w/XAD-4 Sorbent (12) 4 hr samples during (5) 48 hr sample runs.	Nicotine ($\mu g/m^3$) Range 0.29 - 11.5 A.Mean 2.1
First (1983)	USA	Public Places	Various	Not Given	Pump w/Potassium bisulfate filter	Site — Avg. Conc. ($\mu g/m^3$) Chamber1 — 13.9 - 1 cig. smoked Chamber2 — 13.9 - 1 cig. smoked School cafeteria1 — 5.5 - no smokers School cafeteria2 — 2.7 - 2-3 smokers Tavern1 — 6.3 - 1-5 smokers Tavern2 — 9.4 - 2-3 smokers Tavern3 — 15.9 - mostly 1 smoker Bus Terminal — ---- - 50-100 people, 1-5 smokers Fast Food Restaurant — 30.0 - 1-3 smokers during sampling Sm. Sitdown Rest.1 — 12.0 - 15 diners, 4 smokers Sm. Sitdown Rest.2 — 16.3 - 23 diners, 1 smoker
Henderson, et al. (1989)	USA	Homes 15 w/Smokers 12 w/o Smokers	Not Given	Not Given	Pump w/Sodium Bisulfate Filter 5pm-7am @ 2 days	Average Concentration ($\mu g/m^3$) Smoking Homes 3.74 Non smoking Homes 0.34

Table 3. Continued.

IT Corp. (1987)	USA	Offices (38) Restaurants (36)	Not Given	Not Given	Pump w/XAD-4 Sorbent 1 Hr. Samples	Offices ($\mu g/m^3$): Range nd - 30, A. Mean 6; Restaurants ($\mu g/m^3$): Range nd - 12, A. Mean 4. (Offices & Restaurants sampled had no smoking restrictions)
Jenkins, et al. (1988)	USA	Restaurants (36)	Not Given	Not Given	Personal Pump w/ Tenax Sorbent. 1 hr samples	Nicotine ($\mu g/m^3$): Range 0.5 - 37.2, A. Mean 5.78
Lofroth, et al. (1989)	USA	Tavern	5 - 25 $180m^3$	Not Given	Pump w/ filter 3 & 4 hr Samples	1st Study (3hr): 71 $\mu g/m^3$; 2nd Study (4hr): 60 $\mu g/m^3$
McCarthy, et al. (1987)	USA	Homes (81) 68S, 13NS	Not Given	Not Given	Pump w/ Sodium bisufate filter, Personal & Area Samples	Mean / Median / Range ($\mu g/m^3$): Personal (NS) 0.3 / 0.2 / 0.0 - 1.0; Personal (S) 2.5 / 1.9 / 0.1 - 12.0; Home (NS) 0.1 / 0.0 / 0.0 - 1.6. (Personal samples done on children 8-11 yrs old)
Miesner, et al. (1989)	USA	Public Buildings (11)	Not Given	Not Given	Pump w/Sodium bisulfate filter	n / A. Mean ($\mu g/m^3$): Bar (S) 3 / 3.7; Bar/Rest.1 (S) 2 / 7.55; Bar/Rest.2 (S) 2 / 7.85; Subway St. (NS) 1 / 1.0; Hospital (S) 1 / 1.6; Clinic 1 / 17.1 (Des. Smoking Area in NS Building); Office Bldg1 (S) 1 / 0.6; Office Bldg2 (NS) 1 / 2.0 (Smoking room directly below); Office Bldg3 (NS) 1 / 0.4; Office Bldg4 (S) 2 / 3.15; Office Bldg5 1 / 26.5 (Des. Smoking Area in NS Building)
Oldaker, et al. (1988)	USA	Offices (46) Restaurants (49)	Not Given	Not Given	Pass Unit w/XAD-4 Sorbent	Offices ($\mu g/m^3$): G. Mean 3.3, A. Mean 4.3, Range 1.0 - 16.3; Restaurants ($\mu g/m^3$): G. Mean 4.5, A. Mean 6.2, Range 0.7 - 15.6
Oldaker, et al. (1990)	USA & Canada	Offices & Restaurants (4 Cities)	Min. 2 people/office 1 smoker	Not Given	PASS Unit w/XAD-4 Sorbent Tube.	Offices ($\mu g/m^3$): Range (n=156) 0 - 69.7, Mean 4.8; Restaurants ($\mu g/m^3$): Range (n=170) 0 - 23.8, Mean 5.1
Proctor (1989)	UK	Offices (10) Train Compartments (20)	Varied 75%	Mechanical Not Given	PASS Unit w/XAD-4 Sorbent, 1 hr samples.	Offices (S) / Offices (NS) / Train (S) / Train (NS) ($\mu g/m^3$): Range 0.6 - 26 / 0.1 - 2.1 / 0.6 - 49.3 / 0.5 - 21.2; A. Mean 6 / 0.6 / 15.3 / 4.5
Proctor, et al. (1989a)	UK	Betting Shops (6)	Not Given	Not Given	PASS w/Tenax Sorbent	n / Range ($\mu g/m^3$) / A. Mean ($\mu g/m^3$): Smoking 11 / 3 - 57 / 19.36; Non Smoking 2 / 0.4 - 2 / 1.2; Outdoor 3 / 0.3 -0 .4 / 0.33
Proctor, et al. (1989b)	UK	Office (1)	265 ft^2/ person	Not Given	Pump w/XAD-4 Sorbent	Mean ($\mu g/m^3$) / Median ($\mu g/m^3$): Smoking 6 / 3.1; Non Smoking 0.6 / 0.6

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Table 3. Continued.

Schenker, et al. (1987)	USA	RR Workers Office, Repair Shop, Outdoors	Not Given	Not Given	Personal Pumps w/Sodium Bisulfate Filter (2 Days)	Mean Concentration ($\mu g/m^3$) Office (n=12) 10.2 ± 2.2 Repair (n=13) 5.8 ± 3.4 Outdoor (n=73) 0.4 ± 0.1
Sterling et al. (1988)	USA & Canada	Offices (32)	Not Given	Not Given	Not Given	Range ND - 43.7 $\mu g/m^3$ Median - ND
Sterling & Mueller (1988)	Canada	Office (1) N-Smoking	.79/10m^2	Forced Air; Recirculation from (S) area	Personal Pump w/XAD-4 Sorbent, 2-8 hr Samples	Range ($\mu g/m^3$) nd - 1
Thomas, et al. (1989)	USA	Industrial Cafeteria	30 ± 9 560 m^3	8.8 ACH 2900 cfm OA 2500 cfm RA	Pump w/XAD-4 Sorbent 2 hr. samples for 14 days (11:30-1:30)	Lunchtime / Background Avg. Conc. ($\mu g/m^3$) 5.1 ± 1.6 / 0.14 ± 0.03 (Average smoking rate during sampling was 26±6 cig/hr)
Turner, et al. (1991)	USA	Offices (585)	126 ft^2/ person	Not Given	Personal Pump w/XAD-4 Sorbent, 1 hour samples.	Nicotine- A. Mean ($\mu g/m^3$) Smoking 6.6 Non Smoking 0.17 Total 3.84
Vaughan & Hammond (1990)	USA	Office	Not Given	Not Given	Passive (M-F) & Active (W) on sodium bisulfate filters.	A.Mean Pre Smoking Policy ($\mu g/m^3$) / Post Smoking Policy NS desks (n=13) 2.45 / 0.3 Snack Bar (n=3) 11.3 / 85.4 (Designated Smoking) Cafeteria (n=6) 4.5 / 5.3 S Desks (n=6) 10.7 / ----

Table 4. Nitrogen dioxide measured under realistic conditions (ppm = 1 900 $\mu g/m^3$; ppb = 1.9 $\mu g/m^3$).

Berwick, et al. (1989) — USA — Homes (72) — Not Given — Not Given — Passive tubes, 3 locations/house, 2 week samples

NO_2, $\mu g/m^3$

Room	1+2 N	1+2 NO_2	1 only N	1 only NO_2	2 only N	2 only NO_2	None N	None NO_2
Kitchen	6	98.50	49	41.07	13	40.92	4	6.40
Living Room	6	76.00	49	43.40	13	24.85	4	6.23
Bedroom	6	104.75	49	38.33	13	28.54	4	5.19
House Ave.	6	90.08	49	40.93	13	31.43	4	5.94

1 = Kerosene heater 2 = Gas stove

Brauer, et al. (1990) — USA — Homes (11) — Not Given — Not Given — Passive samplers Triethanolomine Colorimetric 24 hr. indoor, 48 hr. outdoor

NO_2, ppb

	N	Mean	Min.	Max.
Indoor	30	17	7	36
Outdoor	30	15	5	26

Dumont, (1986) — Canada — Homes (46) — Not Given — Varied — Passive samples, 1 week, 1 sample/house

NO_2	N	A. Mean (ppb)
Wood stove, smoke	9	5.6
Wood stove, no smoke	21	5.1
No wood stove, smoke	4	5.3
No wood stove, no smoke	12	3.5

Good, et al. (1982) — USA — Homes (90)

Summer	S home	NS home
Avg. No. Smokers	2.2	2.7
Avg. No. NSmokers	1.3	0.3
Winter	**S home**	**NS home**
Avg. No. Smokers	2.0	2.7
Avg. No. NSmokers	1.4	0.2

vent. rates not given

Palmes personal sampler, 7 day, kitchen, betroom, living room.

NO_2, means, $\mu g/m^3$

Stove	# of Cig.	N	Kitchen Sum.	Kitchen Win.	Living Room Sum.	Living Room Win.	Bedroom Sum.	Bedroom Win.
Elec.	> 20		15.6	21.3	16.5	23.5	14.0	21.3
Gas	> 20	8	76.3	156.6	66.9	112.2	48.4	96.4
Elec.	≤ 20		11.8	20.3	12.4	19.6	10.7	17.5
Gas	≤ 20	3	87.0	219.6	47.1	117.4	38.7	97.8

NO_2, $\mu g/m^3$

Room	Season	Smoke	N	Mean	Max	Min
Living Room	Summer	NS	54	12.4	86.5	-2.5
		S	38	16.5	40.8	-0.4
	Winter	NS	49	17.5	36.6	5.7
		S	38	21.3	49.6	-1.6
Bedroom	Summer	NS	54	10.7	66.9	-2.7
		S	38	14.0	42.7	-0.6
	Winter	NS	50	20.3	57.1	5.3
		S	38	21.3	54.3	1.4
Kitchen	Summer	NS	54	11.8	72.0	-3.4
		S	38	15.6	44.7	0.5
	Winter	NS	49	19.6	44.5	5.7
		S	38	23.5	65.6	1.4
Outside	Summer	NS	54	21.3	70.5	1.1
		S	38	22.6	54.5	6.3
	Winter	NS	48	52.3	99.9	18.7
		S	35	50.0	91.3	8.9

Hollowell and Miksch (1981) — USA — Office (1) — Not Given — Not Given — One week

NO_2 - 60 $\mu g/m^3$, 30 ppb

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Table 4. Continued.

Hosein, et al. (1985)	Canada	Homes (52)	Not Given	Not Given	NaOH impinger	NO_2 $\mu g/m^3$, Geometric means

	Air Cond. N	Air Cond. NO2	No Air Cond. N	No Air Cond. NO2
Gas Stove	4	175.1	7	182.1
Elec. Stove	12	70.9	29	81.8
No Gas	**Summer**		**Winter**	
	N	NO2	N	NO2
Smoke	29	76.1	29	82.6
No Smoke	12	74.5	12	75.7

Marbury, et al. (1988) — USA — Homes (144) — Not Given — Not Given — Passive sample tubes 2, 2 week samples, 3 samples/home

NO_2, means and range, ppb

	Gas stove 1	Gas stove 2	Elec. stove 1	Elec. stove 2
Outside	19.1 (5.2-26.7) N=36	20.3 (6.9-31.6) N=38	14.1 (5.1-24.3) N=38	19.6 (5.1-30.1) N=28
Activity Room	41.3 (8.4-168.7) N=81	39.3 (7.0-135.9) N=74	7.8 (2.0-20.9) N=59	7.0 (1.3-22.7) N=53
Bedroom	33.1 (4.4-167.1) N=82	30.9 (4.0-140.4) N=75	7.0 (1.6-32.5) N=60	6.2 (1.1-22.4) N=56

1 = 1st cycle of samples 2 = 2nd cycle of samples

Morey and Jenkins (1989) — USA — Offices (7) (problems reported) — Not Given — Not Given — Triethanolamine tube 50-200 ml/min., colorimetric

NO_2, ppm

Bldg.	Outdoor, roof	Indoor
E	<0.07	<0.06-0.10
E	----	0.2-0.3
F	0.04	0.20
G	0.05	0.09-0.10
H	0.10	<0.07-0.09
I	0.10	0.03-0.16
J	<0.02	<0.02-0.20
K	<0.02-0.05	<0.03-0.60
K	0.03-0.08	0.04-0.70

Moschandreas, et al. (1990) — USA — Homes (18) w/gas furnaces — Not Given — Not Given — Portable Chemiluminescence det., 4 samples ≤ 15 min.

NO_2	Appliance Room (ppb) Mean	Appliance Room (ppb) Range	Control Room (ppb) Mean	Control Room (ppb) Range
Furnace Off	29	3 - 33	32	7 - 40
Furnace On	40	3 - 58	42	4 - 54

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Table 4. Continued.

Petreas, et al. (1988)	USA	Mobil Homes (312)	Not Given	Not Given	Palmes tubes, 3 sites/house, one week samples	NO_2, ppb

		Room	N	A. Mean	G. Mean
Summer, all		Kitchen	311	20.73	16.92
		Bedroom	312	14.64	11.71
		Outdoor	30	11.64	8.95
	gas	Kitchen	263	22.89	20.25
		Bedroom	265	15.99	13.51
		Outdoor	25	11.20	8.39
	elec.	Kitchen	47	8.98	6.18
		Bedroom	46	7.77	5.14
		Outdoor	5	13.78	12.33
Winter, all		Kitchen	254	26.56	21.09
		Bedroom	254	18.67	15.10
		Outdoor	27	22.61	19.16
	gas	Kitchen	230	28.68	24.33
		Bedroom	230	19.98	16.77
		Outdoor	23	22.41	18.77
	elec.	Kitchen	23	6.29	5.36
		Bedroom	23	6.07	5.48
		Outdoor	4	23.74	21.52
gas = gas stove				elec. = electric stove	
Summer	Kitchen	LA	61	36.92	24.26
		Non-LA	250	19.26	15.66
	Bedroom	LA	60	22.31	19.44
		Non-LA	252	12.97	10.27
Winter	Kitchen	LA	46	34.75	30.52
		Non-LA	208	24.76	19.55
	Bedroom	LA	48	25.74	21.26
		Non-LA	206	17.03	13.98
LA = Los Angeles basin				Non-LA = Not in LA	

Spengler, et al. (1987)	USA	Homes	Not Given	Not Given	Palmes Passive Sampler	

NO_2	Gas Home (ppb)			Electric Home (ppb)		
	N	Mean	SD	N	Mean	SD
Fall	160	27.6	10	68	11.8	2.5
Summer	142	25.2	6.6	68	14.4	2.5
Winter	166	24.3	5.4	70	17.1	3.5

Sterling, et al. (1988)	USA & Canada	Offices	Not Given	Not Given	Not Given	

	N	Median	Min.	Max.
NO_2	49	ND	ND	0.1 ppm
NO_x	40	ND	ND	26.3 ppm

Yocom, (1982)	USA	Homes (9)	Not Given	Not Given	Palmes tubes, 4 week	

NO_2		Gas stove (5)	Elec. Stove (4)
Mean values ($\mu g/m^3$)	Fixed, Outside	17.1 $\mu g/m^3$	16.9 $\mu g/m^3$
	Kitchen	59.2	15.7
	Bedroom	37.3	14.5
	Personal, Husband	36.3	19.8
	Wife	40.8	16.7
	Child	45.2	8.7

Table 5. Formaldehyde measured under realistic conditions (ppm = 1 230 µg/m³).

Author & Date	Country	Building Type	Occupancy	Ventilation	Sampling	Concentrations/Comments
Dumont, (1986)	Canada	Homes (46)	Not Given	0.21 ach, ave.	Passive badges 2 samples/house 1 week/sample	Formaldehyde (ppm) Mean 0.097 Median 0.091 Range 0.03-0.24
Girman, et al. (1989)	USA	Office Building (52,000 sq. ft.)	Not Given	Mechanical	Midget Impingers chromotropic acid analysis, Formaldehyde	Pre-Bake Out (µg/m³) / Post-Bake Out (µg/m³) 1st Floor 51 / 65 2nd Floor 32 / 38 Plenum 34 / 38 Outdoor BD / BD
Grot, et al. (1991)	USA	Office (1)	230 ft²/ Person	Not Given	Sodium bisulfite impregnated filter	Formaldehyde 0.02-0.06 ppm
Hedge, et al. (1990)	USA	Office Buildings (2)	Not Given	Not Given	EPA Method TO-11 3 hr samples	Mean Formaldehyde (ppm) AM / PM SP 0.023 / 0.019 SP=Smoking Prohibited SR (Office) 0.008 / 0.012 SR=Smoking Restricted SR (Smoking) 0.018 / 0.023
Hollowell and Miksch (1981)	USA	Home (1) Office (1)	Not Given	0.4 ach	Not Given	Formaldehyde in new home Unoccupied, no furniture 80± 9% µg/m³ Unoccupied, with furniture 223± 7% µg/m³ Occupied, day 261±10% µg/m³ Occupied, night 140±31% µg/m³ Outside <20 Aldehydes in an office building (µg/m³) Formaldehyde 49 Formaldehyde from various indoor environments Location / Range (ppm) / Mean (ppm) Mobile homes (2), Pa. 0.1-0.8 0.36 Mobile homes w/ complaints (Wash.) 0-1.77 0.1-0.44 Mobile homes w/ complaints (Minn.) 0-3.0 0.4 Mobile homes w/ complaints (Wisc.) 0.023-4.2 0.88
Lofroth, et al. (1989)	USA	Tavern	5-25 people 180 m³	Not Given	Pump w/sorbent 3 & 4 hr samples HPLC Analysis	1st Study 3 Hr / 2nd Study 4 Hr (µg/m³) Formaldehyde 104 / 89

Table 5. Continued.

Proskiw, et al. (1989)	Canada	Homes (20)	Not Given	see results	Passive dosimeter One week	House type / Formaldehyde (ppm) / Vent. rate (ach)

R-2000	Formaldehyde (ppm) N	Mean	Median	Vent. rate (ach) N	Mean	Median
Mar 86	6	0.061	0.060	6	0.28	0.26
Aug 86	16	0.058	0.057	-	----	----
Oct 86	16	0.080	0.072	16	0.30	0.29
Feb 87	16	0.064	0.061	16	0.43	0.45
Total	54	0.064	0.061	37	0.35	0.36
Conventional						
Mar 86	4	0.078	0.077	4	0.16	0.44
Aug 86	4	0.067	0.065	-	----	----
Oct 86	3	0.090	0.086	4	0.15	0.17
Feb 87	4	0.067	0.060	4	0.20	0.18
Total	15	0.074	0.066	12	0.17	0.17
Smoking homes		0.065	0.063			
Nonsmoking homes		0.068	0.063			

Quackenboss, et al. (1989b)	USA	Homes (151)	Not Given	Not Given	Passive Samplers Sodium bisulfite One week, 3 sites/house	Building type / Evap. Cooler / Mean $\mu g/m^3$ / N

Building type	Evap. Cooler	Mean $\mu g/m^3$	N
Single fam.	Yes	27	50
	No	37	52
	Total	32	102
Mobile/trailer	Yes	36	6
	No	68	10
	Total	49	10
Apt./Condo.	Yes	25	5
	No	51	24
	Total	47	29
All types	Yes	27	62
	No	43	83

Sterling, et al. (1988)	USA & Canada	Offices (259)	Not Given	Not Given	Not Given	Formaldehyde ND - 1.9 ppm; 0.01, median

Stock (1987)	USA	Homes (41)	Not Given	Not Given	Passive badges one week samples two samples/home	Formaldehyde (ppm)

Area	N	Mean	Range
Clear Lake	27	0.07	0.03-0.15
Sunnyside	14	0.10	0.06-0.18

Smoking (cig/day)	N	Mean
<1	26	0.07
1-4	4	0.13
5-10	6	0.07
≥ 20	7	0.07

Yocom (1982)	USA	Homes (2)	Not Given	Not Given	Not Given	House / Formaldehyde ($\mu g/m^3$)

House	Formaldehyde ($\mu g/m^3$) Range	Average	Outdoor
ISUERH	34-75	42	<9
ERHM	54-182	120	<12

Yuill & Comeau (1989)	Canada	Homes (50)	Not Given	0.29, Mean ach 0.00-1.35	Passive bubbler colorimetric 2 hour samples	Formaldehyde (ppm)

Room	N	Ave.	Max.	Min.
Living room	50	0.090	0.261	0.000
Basement	45	0.088	0.235	0.000
Bedroom	49	0.092	0.285	0.000

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Table 6. Benzene measured under realistic conditions (ppb = 3.2 μg/m³).

Author & Date	Country	Building Type	Occupancy	Ventilation	Sampling	Concentrations/Comments
Bayer & Black (1987)	USA	Offices	Not Given	Mechanical	Personal Pump w/Tenax, 4 hr samples(3S,3NS)	Benzene: Smoking 2.0ppb; Non Smoking 1.2ppb
Chan, et al. (1990)	Canada	Homes (12)	Not Given	Not Given	Tenax/Charcoal 2 outdoor, 4 indoor samples each, 90 min. samples, 5-50 liters/ sample	Frequency, Range, and Avg. (μg/m³) Outdoors/Indoors 12 Homes Ambient Air (Nov/Dec): Benzene F=12, Range 1-11, Avg. 7.3 Indoor Air: Benzene F=12, Range 5-59, Avg. 14.8 Frequency, Range, and Avg. (μg/m³) Outdoor/Indoors 6 Homes Ambient Air (Feb/Mar): Benzene F=6, Range 2-8, Avg. 6.0 Indoor Air: Benzene F=6, Range 7-15, Avg. 10.6
Girman, et al. (1989)	USA	Office Building (52,000 ft²)	Not Given	Mechanical	Pump w/Tenax Sorbent, GC/MS	Concentrations (μg/m³) Pre-Bake-Out: 1st Fl. 2nd Fl. Plenum Roof Post-Bake-Out: 1st Fl. 2nd Fl. Plenum Roof Benzene: 2.8, 3, 3, 1, 0.8, 1.5, BD, BD (BD = Below Detection)
Lewis (1991)	USA	Homes (10)	Not Given	.2-.8 ACH	SS Canister 12 hr samples, GC/MS	Avg. Indoor Conc. from OUTdoor Sources and Indoor Souces (ppbC) Benzene OUT: R05 11, R08 17, R11 20, R14 11, R17 14, R20 15, R26 30, R29 13, ALL 15 Benzene IN: R05 2, R08 -1, R11 2, R14 1, R17 0, R20 1, R26 -1, R29 2, ALL 1
Lofroth, et al. (1989)	USA	Tavern	5 - 25 people 180 m³	Not Given	Stainless steel canister, GC/MS	First Study (3hr): Indoor 27, Outdoor 6 Second Study (4hr): Indoor 21, Outdoor 8 Benzene (μg/m³)
Pleil, et al. (1986)	USA	Homes (26)	Not Given	Not Given	Summa Cannisters GC/FID,ECD	Indoor Air (PPBV) Summer Data, 15 Samples: Benzene # Obs. 15, Mean 7.6, Range 0.39-48 Winter Data, 16 Samples: Benzene # Obs. 16, Mean 4.8, Range 0.53-23.6 Outdoor Air, Summer & Winter, 6 Samples Each: # Obs. 12, Mean 0.57, Range 0.33-0.77
Proctor (1989)	UK	Offices (10) Trains (20)	Not Given	Not Given	Pump w/Tenax Sorbent, 1 hr. samples,	Benzene: A. Mean 6, Median 3.1, Range 0.6 - 26; A. Mean 11.8, Median 11.6, Range 0.9 - 28.6 (μg/m³) Offices(NS): Benzene 12, 10, 3 - 31 Train(NS): 7.4, 5.1, 2.9 - 29.3

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Table 6. Continued.

Proctor, et al. (1989a)	UK	Betting Shops (6)	See chart	Not Given	Tenax TA, 3 l/hr. briefcase, GC/MS	

Compound	N	Site/smoke	Pop/smokers	Qty, Mean ($\mu g/m^3$)
Benzene	3	A/S	20/5	14.3
	2	B/S	10/2	14
	2	C/S	7/3	21
	2	D/S	15/5	18.5
	2	E/S	10/2	18.5
	1	E/Outside	Hvy. Traffic	22
	2	F/NS	11/0	9.5
	2	F/Outside	Med. Traffic	15

Proctor, et al. (1989b)	UK	Office (1)	265 ft^2/person	Not Given	Tenax, 10 ml/min. GC/MS, pump Concs in $\mu g/m^3$	

Compound	Smokers' Office A. Mean	Smokers' Office Median	Nonsmokers' Office A. Mean	Nonsmokers' Office Median
Benzene	13	8	12	10

Proctor, et al. (1991)	UK	Homes & work	Varied	Varied	Personal sampler 24 hour samples, 52 women	

Compound	Smoke/Work Mean	Smoke/Work Median	Smoke/Work Range	Smoke/No work Mean	Smoke/No work Median	Smoke/No work Range	No smoke/Work Mean	No smoke/Work Median	No smoke/Work Range	No smoke/No work Mean	No smoke/No work Median	No smoke/No work Range	All Subjects Mean	All Subjects Median	All Subjects Range
Benzene	15.7	13.3	3.2-48.7	21.6	13.4	5.2-103	60.7	15.5	0.7-510	13.2	10.4	0.2-32.1	26.5	12.8	0.2-510

Sheldon, et al. (1988b)	USA	Hospital (1) Nursing Home (2) Offices (3)	Not Given	Not Given	Pump w/Tenax 12 hr sample GC/MS	

	Mean Concentration (ng/L)									
	Martinsburg, WV			Fairfax, VA		Worcester, MA		Washington, DC	Cambridge, MA	Martinsburg, WV
	Hospital (new)[a]			Office (new)[b]		Nursing Home (new)[c]		Office (old)	Office/School (old)	Nursing Home (old)
	Trip 1 (7/84)	Trip 2 (10/84)	Trip 3 (8/85)	Trip 1 (1/85)	Trip 2 (4/85)	Trip 1 (4/85)	Trip 2 (8/85)	Trip 1 (8/84)	Trip 1 (2/85)	Trip 1 (7/84)
Benzene	1.55	2.13	2.88	2.74	4.95	1.70	2.44	5.61	4.50	3.13

[a]Building completed approximately 34 weeks before first monitoring trip.
[b]Building completed approximately 1 week before first monitoring trip.
[c]Building completed approximately 4 weeks before first monitoring trip.

Sheldon, et al. (1988a)	USA	Office Building (1)	Not Given	Not Given	Pump w/Tenax 12 hr sample GC/MS	

	Concentration ($\mu g/m^3$)			
	Indoors[a]			Outdoor[b]
	July	Sept.	Dec.	all trips
Benzene	5	7	7	3

([a]Mean of six 12-hr avgs. at 5 indoor locations. [b]Mean of 18 12-hr avgs. at one outdoor location.)

Sheldon, et al. (1990)	USA	Homes (12)	16 individuals	Not Given	24 Hour Samples w/Tenax, GC/MS	

	Mean Concentration (ng/l) + S.D.		
	Outdoor (n=4)	Indoor (n=12)	Personal (n=8)
Benzene	12±8.8	8.7±2.6	11±4.0

Sterling, et al. (1988)	USA & Canada	Offices (see table for numbers)	Not Given	Not Given	Not Given	

Compound	N	Range	Median
Benzene	27	ND-1.4 mg/m^3	trace

Table 6. Continued.

Wallace, (1986)	USA	Various (TEAM study)	Not Given	Not Given	Personal and Outdoor samples	Population-Weighted Arithmetic Mean Exposures (24 Hour Samples) $\mu g/m^3$

Sites	Benzene PE[a]	Benzene Out
New Jersey		
Fall 1981	28[b]	9
Summer 1982	NC[b]	NC
Winter 1983	NC	NC
N. Carolina	9	12
N. Dakota	NC	NC
California		
LA:Winter84	18	16
LA:Spring84	9	4
CC:Spring84	7	2

[a]Personal Exposure

[b]Not Calculated--did not meet quality control criteria.

Wallace, et al. (1987)	USA	Homes	Not Given	Not Given	Personal Pumps w/ Tenax sorbent, 12 hr samples GC/MS	Personal Air Exposures-Unweighted Geometric Mean

	n		Benzene	
	S	NS	S	NS
NJ(F)	153	188	18	11
NJ(S)	69	75	NR	NR
NJ(W)	24	22	NR	NR
LA(W)	29	85	18	14
LA(SP)	11	40	8	7
AP(SP)	19	49	8	7
Overnight Indoor Conc.-Weighted Geometric Mean ($\mu g/m^3$)				
NJ(F)	252	94	16	8.4
NJ(S)	111	44	NR	NR
NJ(W)	37	12	NR	NR
LA(W)	56	58	17	11
LA(SP)	23	28	4.8	4.5
AP(SP)	35	33	4.9	4.4

F=Fall S=Summer W=Winter SP=Spring

Weschler, et al. (1990)	USA	Office Building	Not Given	Not Given	Passive Samplers 4 Periods During 1 Year	VOC ($\mu g/m^3$) Building 2 on 4th Floor During Four Sampling Periods

	6/25/87-7/16/87	9/9/87-10/1/87	11/6/87-12/4/87	3/3/88-3/15/88
Benzene	ND	ND	1.3	ND

Table 7. Nitrosamines measured under realistic conditions.

Author & Date	Country	Building Type	Occupancy	Ventilation	Sampling	Concentrations/Comments
Hoffman, et al. (1987)	USA & Austria	Various	Not Given	Not Given	Pump w/liquid traps, GC/TEA, 1-4 hr continuous samples	

	NDMA	NDEA ($\mu g/m^3$)
Train-Bar	0.11-0.13	ND
Bar	0.24	ND
Sports Hall	0.09	ND
Betting Parlor	0.05	ND
Residence, NS	<.003	ND
Office	0.03	0.03
Conference Room	0.02-.033	0-.02
Work Room	0.023	0
Restaurant	0-0.05	0
Dance Hall	0.07	0.2

Author & Date	Country	Building Type	Occupancy	Ventilation	Sampling
Stehlik, et al. (1982)	Austria	Offices Restaurants Bars	see chart	Not Given	Pump w/liquid traps, GC/TEA, 1-4 hr continuous samples

Room size	Room Type	# of People	Tobacco Consumed	NDMA (ng/L)	NDEA (ng/L)
$207m^3$	Working Room	7	Continuous (2hr)	0.024	BD
301	Conference Room	15	26 cig., 1 pipe 6 cigarillos (2hr)	0.031	BD
70	Office	6	27 cig. (2hr)	0.03	0.03
50	Sm. Conf. Room	12	37 cigs., 4 pipes 3 cigars (2hr)	0.02	0.02
120	Suburban Rest.	20	20-30 cigs, 2 pipes (2hr)	BD	BD
160	Vienna Rest.	23	20 cigs., (1hr)	0.01	BD
180	Vienna Rest. 2	25	25-30 cigs., (1hr)	0.04	BD
160	Vienna Rest. 3	23	15-20 cigs., (1hr)	0.05	BD
320	Dancing Bar	30-70	Not Determ.(4hr)	0.07	0.2

Table 8. PHA measured under realistic conditions.

Author & Date	Country	Building Type	Occupancy	Ventilation	Sampling	Concentrations/Comments

HOME (ng/m^3) — A. Mean

(Selected PAH measured in living rooms)

Compound	1NS	2S	3S	4S	5S	6S	7NS	8NS	S	NS
Naphthalene	800	1100	1100	1100	2200	4200	1800	880	1940	1160
Acenaphthylene	18	37	17	48	120	59	10	8.9	56	12
Phenanthrene	71	87	80	200	210	110	59	86	137	72
Fluoranthene	7.6	8.6	6.5	19	23	6.4	7.2	12	13	9
Pyrene	4.6	5.2	4.0	11	17	9.5	5.6	7.4	9	6
Benzo(e)pyrene	0.74	3.2	1.3	3.7	10	6.5	0.68	1.4	5	1
Benzo(a)pyrene	0.28	1.2	0.34	1.4	3.3	1.4	0.31	0.83	1.5	0.47
Quinoline	9.4	240	76	480	1100	300	23	9.1	439	13.8
Isoquinoline	21	140	34	300	620	170	35	16	253	24

Daisey, et al. (1989) — USA — Homes (7) — Not Given — 0.13-0.89 ACH — Pump w/Teflon coated fiberglass filter, 48 hr samples

PAH (ng/m^3)

House	Wood burning	FLU	PYR	BEP	BBF	BKF	BAP	BGHIP	IND	TOTAL
102	+	0.72	0.47	0.48	0.52	0.24	0.66	1.23	1.77	6.1
	-	1.18	0.98	0.41	0.24	0.10	0.17	0.15	0.12	3.4
106	+	0.32	0.62	0.65	0.68	0.29	1.24	6.20	3.54	13.5
	-	0.58	0.70	0.42	0.11	0.04	0.11	0.33	0.16	2.4
108	+	0.96	0.50	0.38	0.40	0.19	0.43	0.55	1.06	4.5
	-	0.11	0.03	<0.06	0.04	0.02	0.03	0.08	0.09	0.4
203	+	0.81	0.58	0.95	0.51	0.21	0.40	0.75	0.98	5.2
	-	0.07	0.14	<0.06	<0.007	0.007	<0.009	<0.01	<0.02	0.3
204	+	0.16	0.02	0.14	0.10	0.03	0.07	0.12	0.20	0.8
	-	0.09	0.22	0.07	0.02	0.01	<0.009	0.02	0.03	0.5
208	+	0.65	0.65	1.36	1.22	0.48	1.34	0.87	2.23	8.8
	-	0.07	0.05	<0.06	0.009	0.005	<0.009	<0.01	<0.02	0.2
300	+	0.18	1.53	0.31	0.27	0.09	0.33	0.25	0.39	3.4
	-	0.50	0.31	0.43	0.04	0.02	0.02	0.10	0.14	1.6

(FLU=Fluoranthene, PYR=Pyrene, BEP=Benzo(e)pyrene, BBF=Benzo(b)fluoranthene, BKF=Benzo(k)fluoranthene, BAP=Benzo(a)pyrene, BGHIP=Benzo(ghi)perylene, IND=indeneo(1,2,3,-cd)pyrene)

Grimsrud, et al. (1990) — USA — Office Buildings (40) — Not Given — Not Given — Gravimetric PM3.0, 126 RSP samples analysed for B(a)P

	Mean Concentration B(a)P (ng/m^3)
Non smoking Areas	0.4
Smoking Areas	1.1

Lioy, et al. (1987) — USA — Homes (4) — Not Given — Not Given — PM10 extraction

Home	N	B(a)P G. Mean	Maximum (ng/m^3)
1	14	0.5	4.8
2	13	1.1	4.4
3	14	0.8	2.3
6	13	0.3	1.4

Waldman, et al. (1989) — USA — Homes — Not Given — Not Given — PM10 extraction — BaP Range nd - 8.6 ng/m^3

receive would provide an independent assessment as to whether these health claims are realistic.

Dose: Dose is defined as the amount of a substance that actually enters the body. For airborne materials the dose is a function of the concentration of a substance, the duration of exposure, the rate of respiration, and the percentage of material potentially retained by the lungs.

Concentration: Concentrations of RSPs were determined as the mean difference between nonsmoking and smoking conditions as shown in Table 9.

Duration of exposure: In order to determine the duration of exposure in each of the five categories, data on time activity patterns were needed. Though there were several references available describing studies which performed time/activity surveys of one type or another, there were few that were adequate. The requirements that needed to be met included:

1. Data needed to be American or Canadian
2. Study needed to be of adults
3. Study could not be of select subpopulations
4. Study needed to include most of the entire day.

Five publications met the four chosen criteria (Jenkins et al. 1990; Juster and Stafford 1990; Shaw 1983; Spengler et al. 1985; Szalai et al. 1972). Each author's activity categories were allocated to one of the following locations that were chosen to match exposure categories used for the literature review.

	Location	Exposure Category
1.	Home, awake	Home
2.	Home, asleep	Home
3.	Work	Office, workplaces
4.	Public Transportation	Public transportation
5.	Restaurant	Restaurant
6.	Bar	Bar/Taverns
7.	Other, public	Office, workplaces (similar to office environment)
8.	Outdoor	None

Time allocations for each category were then averaged to produce an average day based on the five studies reviewed. Time spent in each category is expressed separately for males, females, employed, and unemployed persons. Time spent in each activity category is expressed in minutes per day and hours per day averaged over seven days per week. If the average day did not add up to 1440 min (24 h), each category was adjusted by the percentage of the error to produce a 24-h day.

There were fewer data available regarding employed/unemployed time activity patterns than for male/female time activity patterns. Because of this, it was necessary to subdivide some authors' categories into more than one of the five chosen for

Table 9. Mean respirable particles µg/m³ in smoking and nonsmoking areas in real-life situations.

		Smoking			Nonsmoking			Diff.in Means
Category	# of Studies	N	Mean	Range	N	Mean	Range	S - NS
Homes	14	951	49.5	17-212	905	22.3	7-77.1	27.2
Offices and Public Places	24	805	67.7	12-2700	640	45.9	nd-240	21.8
Restaurants	11	257	131.5	nd-685	335[b]	89.7	c	41.8
Bars/Taverns	4	9	103.7	c	c	c	c	103.7[d]
Trains	1	20	216	70.8-325	20	186	63.3-450	30

a - The mean is calculated by weighting the mean values in each study based on sample size and the calculating an overall arithmetic mean. If actual values for nonsmoking or smoking areas were not given, but UVPM values were available, the UVPM values were utilized in obtaining the weighted means. For example, if a total RSP mean value and UVPM mean value were available for a smoking area but not for a nonsmoking area, a nonsmoking area value was obtained by subtracting the UVPM value from the total RSP value.

b - Derived from total RSP-UVPM.

c - No ranges available; no data available.

d - Some of this RSP would be due to sources other than tobacco smoke. If properties are similar to restaurants, this mean would be approximately 48.3.

Table 10. Carbon monoxide concentrations (ppm) in smoking and nonsmoking areas in real-life situations. Conversion factor: 1ppm = 1.15 mg/m³.

Category	No. of Studies	Smoking N	Smoking Mean	Smoking Range	Nonsmoking N	Nonsmoking Mean	Nonsmoking Range	Diff.in Means S - NS
Offices and Public Bldgs.	13	697	2.95	0.1-8.7	275	2.99	0.7-4.0	-0.04
Restaurants	5	107	3.6	0.4-9.0	---	----------		---
Taverns/Bars	2	5	6.4	-------	---	----------		---
Trains	2	18	2.2	1.0-5.2	10	1.30	0.5-2.9	0.90
Buses	1	35	6.0	3.7-10.2	---	----	-------	---
Autos	1	---	----	--------	213	11.6	8.8-22.3	---

Homes - Very little information on homes
Yuill et al. (1989); 76 homes, 0.7 mean, range 0-4.0
No data on smoking or nonsmoking.

Table 11. Nicotine concentrations (μg/m³) in smoking and nonsmoking areas in real-life situations.

Category	Smoking No. Studies	Smoking Sample Sites	Smoking Mean	Smoking Range	Nonsmoking No. Studies	Nonsmoking Sample Sites	Nonsmoking Mean	Nonsmoking Range
Offices and Public Bldgs.	14	673	6.2	ND-69.7	5	270	0.3	0.1-2.1
Restaurants	10	390	5.7	0-37.2				
Taverns/Bars Betting Shops	4	17	19.1	3-65.5	1	2	1.2	0.4-2.0
Homes	1	98	3.7	0.1-12.0	3	28	0.29	0-1.0
Trains	1	20	15.3	0.6-49.3	1	20	4.5	0.5-21.2

this review. To do this, the proportion determined from the male/female time activity pattern was used to divide that author's category. For example, time at home for employed and unemployed persons was determined by Spengler et al. (1985) but not divided into waking and sleeping time. The amount of time determined to be spent sleeping in the male/female time allocation was subtracted from Spengler's home time to produce home-awake and home-asleep values for employed/unemployed persons. The time activity patterns calculated from the literature are listed in Tables 12 and 13.

Respiration rates: Respiration rates were taken from Rosenblatt et al. (1982):

1) Adult male, light work—28.6 L/min (1.7 m^3/h)
2) Adult male, resting—7.43 L/min (0.4 m^3/h)
3) Adult female, light work—16.3 L/min (1.0 m^3/h)
4) Adult female, resting—4.5 L/min (0.3 m^3/h).

These figures assume 16 h of rest and 8 h of light work per day, and are in agreement with those from other sources (USEPA 1989).

An average of approximately eight hours per day is spent sleeping. This leaves eight waking hours per day spent at "light work" and eight hours spent "resting". Since no single activity period is likely to be all "light work" or all "resting", the two values were averaged to produce a respiration rate for "awake". These values are as follows:

Male, awake—1.05 m^3/h
Male, asleep—0.4 m^3/h
Female, awake—0.65 m^3/h
Female, asleep—0.3 m^3/h.

Retention efficiency: Retention efficiency for side-stream smoke particles has been reported by Hiller et al. (1982, 1987) to be 11%.

Results of dosimetric calculations

In any exposure situation, the retained dose may be calculated by the following equation:

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Dose = Concentration × duration × respiration rate × % retention.

Concentration is the concentration of RSP measured in the various categories of exposure in Table 9.

Duration for that category is taken from the time/activity tables (Tables 12 and 13).

Respiration rates are calculated from Rosenblatt. The "home, asleep" category is given the resting respiration rate. All other categories are assigned the "awake" respiration rate.

Percent retention is 11% as calculated by Hiller.

Exposure to ETS can come in any number or combination of situations. To estimate the breadth of possible ETS exposures, doses of ETS have been calculated for four different scenarios:

1) Male and female—exposed at home, in restaurants, bars and other public places, but not at work or while traveling. This essentially calculates the ETS exposure one may expect during nonworking hours.

2) Male and female—exposed only at work and while traveling (assume all transportation by train). This will produce a conservative estimate of occupational exposures.

3) Worst case exposure, male and female—exposed at home and while traveling, works in a bar and is also exposed in other public places (assumes use of the average exposure values).

4) Employed vs. unemployed males—exposed in all facets of life, employed person works in office environment. Employed and unemployed females would be essentially the same but with different respiration rates.

The calculations for each are as follows:

1) Male and female—exposed at home, in restaurants, bars and other public places, but not at work or while traveling. Dose = (concentration; home × duration; awake x respiration rate; awake × retention) + (concentration; home × duration; asleep × respiration rate; asleep × retention) + (concentration; restaurant × duration x respiration rate x retention) + (concentration; bar × duration × respiration rate × retention) + (concentration; offices, × duration; other, public × respiration rate × retention).

Male Dose = (27.2 × 6.4 × 1.05 × 0.11) + (27.2 × 7.5 × 0.4 × 0.11) + (41.8 × 0.5 × 1.05 × 0.11) + (103.7 × 0.8 × 1.05 × 0.11) + (21.8 × 1.6 × 1.05 × 0.11)

Male Dose = 45.11 µg/day, 16.46 mg/y

Female dose = (27.2 × 8.7 × 0.65 × 0.11) + (27.2 × 7.8 x 0.3 × 0.11) + (41.8 × 0.4 × 0.65 × 0.11) + (103.7 × 0.9 × 0.65 × 0.11) + (21.8 × 1.6 × 0.65 × 0.11)

Female Dose = 34.28 µg/day, 12.51 mg/y

2) Male and female—exposed only at work and while traveling.

Male Dose = 17.19 µg/d, 6.27 mg/y

Female dose = 6.94 µg/d, 2.53 mg/y

3) Maximum exposure, male and female—exposed at home and while traveling, works in a bar and is also exposed in other public places.

Male Dose = 108.65 µg/d, 39.66 mg/y

Female Dose = 57.62 µg/d, 21.03 mg/y

Table 12. Total time allocations for male/female.

Location	Males Min/day	Males Hr/day	Females Min/day	Females Hr/day
1. Home, awake	386	6.4	521	8.7
2. Home, Asleep	452	7.5	470	7.8
3. Work	296	4.9	167	2.8
4. Travel	81	1.4	67	1.2
5. Restaurant	31	0.5	26	0.4
6. Bar	48	0.8	54	0.9
7. Other, public	94	1.6	95	1.6
8. Outdoor	52	0.9	40	0.7
TOTAL	1,440	24.0	1,440	24.1*

* Totals do not add up to 24 hours due to rounding.

Table 13. Total time allocations, employed, and unemployed persons.

Location	Employed Min/day	Employed Hr/day	Unemployed Min/day	Unemployed Hr/day
1. Home, Awake	427	7.1	733	12.2
2. Home, Asleep	511	8.5	499	8.3
3. Work	276	4.6	5	0.1
4. Travel, Public	81	1.4	37	0.7
5. Restaurant	17	0.3	20	0.3
6. Bar	33	0.6	36	0.6
7. Other, Public	61	1.0	68	1.1
8. Outdoor	34	0.6	42	0.7
TOTAL	1,440	24.1*	1,440	24.0

* Totals do not add up to 24 hours due to rounding.

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4) Employed vs. unemployed males—exposed in all facets of lifestyle, employed person works in office environment.
Employed Male Dose = 60.06 µg/d, 21.92 mg/y
Unemployed Male Dose = 62.34 µg/d, 22.76 mg/y.

There are several chemical and exposure pattern differences between direct smoking and ETS exposure. However, expressing ETS exposure in cigarette equivalents is one way to develop a sense of the magnitude of exposure.

Arundel et al. (1988) has calculated a retained dose of particles of 10.56 mg/cigarette and 8.48/mg cigarette for male and female direct smokers, respectively. Using these figures, the dose in cigarette equivalents of particles for each of the four exposure scenarios becomes:

1) Exposed at home, in restaurants and in bars:
Male—1.56 cigarette equivalents per year
Female—1.48 cigarette equivalents per year.

2) Exposed at work and travel only:
Male—0.59 cigarette equivalents per year
Female — 0.30 cigarette equivalents per year.

3) Maximum, works in a bar, exposed in all facets of life:
Male—3.76 cigarette equivalents per year
Female—2.48 cigarette equivalents per year.

4) Employed vs. unemployed males:
Employed—2.08 cigarette equivalents per year
Unemployed—2.15 cigarette equivalents per year.

Clearly, such calculations of cigarette equivalents have little or no relevance to any assessment of the potential risk from exposure to ETS. The mainstream smoke particles inhaled during the act of puffing on a cigarette will be quite different from ETS particles in terms of their precise chemical composition, their size distribution and the route in which they are taken into the body. However, the calculation of cigarette equivalents does at least allow a subjective impression of the relative doses involved in active smoking compared to everyday exposure to ETS.

DISCUSSION

Indoor air and ETS review

Respirable particulate matter: Table 9 shows the mean RSPs in smoking and nonsmoking areas in real life conditions. The mean differences between nonsmoking and smoking conditions are 27.2 µg/m^3 for homes, 21.8 for offices and public facilities, 41.8 for restaurants, in excess of 48.3 for bars and taverns, and 30 for trains.

Carbon monoxide: Table 10 shows carbon monoxide concentrations (ppm) in smoking and nonsmoking areas in real life conditions. In offices, where the data allowed for a smoking/nonsmoking comparison, the mean difference was 0.28 µL/L (0.32 mg/m^3). Because of the magnitude of this difference compared to the mean levels measured and ranges reported, the significance of this difference must be questioned. There are essentially no data since 1982 on nonsmoking conditions in restaurants or bars. The slightly higher levels in these areas indicate that smoking may account for at least part of the CO.

There is little information on CO in homes. Yuill and Comeau (1989) report on home CO, but they do not indicate whether smoking was present.

The information on CO levels in transportation vehicles indicates little difference between smoking and nonsmoking areas on trains. Buses have higher levels (6.0 µL/L; 6.9 mg/m^3) of CO; but from the information presented it is impossible to determine if the concentration is affected by tobacco smoke or by vehicle exhausts. The higher level of CO (11.6 µL/L; 13.3 mg/m^3) in autos where no smoking took place indicates that the impact is from vehicle exhausts (Flachsbart et al. 1987).

Nicotine: Table 11 shows nicotine concentrations in smoking and nonsmoking areas. Nicotine, as expected, is considerably lower in concentration in nonsmoking compared to smoking areas. The means of 6.2, 5.7 and 3.7 µg/m^3 for offices and public buildings, restaurants and homes, respectively, where smoking occurred, are extremely low exposures compared to the levels of many other volatile and semi-volatile substances found in indoor air. Smoking sections of trains are slightly higher and, as expected, bars and taverns exhibited the highest mean levels (19.1 µg/m^3).

Nitrogen dioxide: Most studies which measure nitrogen dioxide (NO_2) in the indoor environment evaluate the effect various appliances, such as gas stoves or kerosene heaters, have on NO_2 concentrations. Only three studies attempted to evaluate the impact of ETS on NO_2 levels in homes (Dumont 1986; Good et al. 1982; Hosein et al. 1985). Houses where smoking occurred had approximately 3.0 µg/m^3 higher nitrogen dioxide levels than houses with no smoking. There are no studies which evaluate the effect of ETS on NO_2 levels in offices, restaurants, bars, or transport vehicles.

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Formaldehyde: There is a substantial amount of information regarding formaldehyde levels indoors. However, little of it evaluates the potential effect of ETS on formaldehyde levels. Of the literature reviewed, one study of 41 homes (Stock 1987) and one study of two office buildings (Hedge et al. 1990) compared formaldehyde levels to smoking status. The residential study found no increase in formaldehyde levels with increased levels of smoking. The office study found approximately a 10 nL/L (12.3 $\mu g/m^3$) increase in formaldehyde levels in a designated smoking area over a nonsmoking area of one building. However, there was no difference between the designated smoking area in one building and another nonsmoking building. Because of the limited number of samples and the number of confounding sources for formaldehyde these results must be interpreted with caution.

Benzene: Five studies contained benzene data in smoking and nonsmoking areas (see Table 6). In two of these studies, nonsmoking areas reportedly had higher concentrations of benzene. In three studies, nonsmoking areas had lower concentrations than smoking areas. The differences are minimal, especially when outdoor concentrations also are considered.

The assumption was made that in studies where smoking/nonsmoking was not reported by the author, that there was some smoking occurring. Where smoking is assumed to take place, the highest mean level recorded was 15.7 $\mu g/m^3$. However, in nonsmoking areas the highest mean was 60.7. In summary, there are few data to support a conclusion that smoking has a significant impact on benzene concentration in offices.

The data on benzene in homes suggest that smoking homes have a higher concentration than nonsmoking homes by approximately 3.5 $\mu g/m^3$. It is difficult to separate home-only data from personal exposure monitor data except for two studies where indoor air benzene ranges from 4.8-14.8 $\mu g/m^3$. The one overnight study in homes by Wallace et al. (1987) shows an increase of approximately 3.1 $\mu g/m^3$ in smoking homes vs. nonsmoking homes.

There are few data on benzene on public transportation. A paper by Proctor (1989) on 20 trains shows a slightly higher mean concentration of benzene in smoking versus nonsmoking areas. The mean differences are small.

Polyaromatic hydrocarbons (PAH's) and nitrosamines: PAH's are commonly found in indoor air. Except for naphthalene, quinoline, and isoquinoline, the levels measured are in the low ng/m^3 range (Table 8). Few studies have compared PAH levels in smoking and nonsmoking environments. The two studies in this review which have compared smoking/nonsmoking areas indicate that between 50% and 80% of the concentration of various PAHs may come from tobacco smoke. Because of the paucity of data, this must be interpreted with caution. The presence of these substances has also been documented in wood smoke, automotive exhaust, foods, alcoholic beverages, and cosmetics (NTP 1989).

Two studies have reported the presence of N-nitrosodiethylamine (NDEA) and N-nitrosodimethylamine (NDMA) in smoke-filled rooms (Table 7). These are not tobacco-specific nitrosamines. The lack of reported background levels and the unusually high level of smoking prevents the evaluation of ETS contribution to these substances. Other nitrosamines reported to be found in tobacco smoke have either not been monitored or not been reported in ambient air where ETS is present.

The U.S. Surgeon General (1986) and NRC (1986) reports include summary tables of known or suspect human carcinogens present in concentrated sidestream and mainstream tobacco smoke. Concentrated sidestream and mainstream tobacco smoke are not representative of ambient air ETS because the concentrated smoke is subject to dilution in ambient air, removal by sinks or filtration, and possible transformation (Reasor 1987).

Based on current literature, it appears that ETS has an effect on the levels of nicotine and respirable particles in an indoor environment. There also is a slight increase in NOx levels in the presence of ETS. ETS appears to have less effect on the levels of carbon monoxide, formaldehyde, or benzene.

Odor and irritation: Studies by Cain et al. (1987), Weber (1984), and Weber and Grandjean (1987) indicate that levels of ETS which produce carbon monoxide concentrations below 1.5-2.0 $\mu L/L$ (1.7-2.3 mg/m^3) also will be acceptable to 80% or more of the occupants in terms of irritation, odor, and overall quality. Where a moderate amount of smoking occurs, this level is unlikely to be approached. This conclusion is reflected in ASHRAE Standard 62-1989 (ASHRAE 1989), which does not separate smoking and no-smoking areas in terms of recommended ventilation rates.

It is possible that the 1.5-2.0 $\mu L/L$ (1.7-2.3 mg/m^3) level of carbon monoxide may be exceeded in some cases. This would occur either in heavy smoking situations, such as those found in bars or smoking lounges, or where inadequate ventilation occurs.

Dosimetric calculations

One can calculate the doses of RSP retained from ETS. This ranges from approximately 3 mg/y for a female exposed only at work to approximately 40 mg/y for a male exposed in all facets of his life. Occupational exposure is only a minor portion of total exposure in most cases. Exposures in one's private life may produce the largest retained dose of ETS particulates.

For exposures received while in transit, it was assumed that all transit time was spent in the smoking section of trains. Actual time allocation data (Jenkins et al. 1990) indicate that only 5% of travel time is spent on public transport. It is believed that when traveling by auto, nonsmokers will generally choose to travel with other nonsmokers. There are no data comparing particulate levels in autos where smoking occurs to levels were there is no smoking. However, carbon monoxide levels of 8.8-22.3 µL/L (10.1-25.6 mg/m^3) found by Flachsbart et al. (1987) suggest that exposures in automobiles come primarily from vehicle exhaust and not ETS. Thus, the choice of trains as a surrogate for ETS exposure while in transit is conservative.

The estimated mean RSP dose of exposure to the population of nonsmoking adults is based on the difference between smoking and nonsmoking environments. There is a possibility that a person could be exposed to the high end of the range of RSPs as reported in the literature. The likelihood is that the bulk of the RSPs in those situations would be from sources other than tobacco smoke.

Persons also may be exposed to the upper limits of ETS—derived RSP ranges. Generally, these are for short time intervals. The mean difference values for the various categories of exposure should reflect the overall minimum and maximum exposure such that the total dose for the year would be included.

Attempts to calculate increased risk or excess mortality from lung cancer (Repace 1985; NRC 1986) and heart disease (Wells 1988; Glantz and Parmley 1991) reportedly resulting from ETS exposure are not uncommon. These calculations, however, rely almost exclusively on epidemiologic studies that have no adequate measure of exposure or dose. Such studies are known to be subject to problems of bias (Lee 1987) and confounding factors (Koo et al. 1988) which have not been taken adequately into account.

One of the paradigms of toxicology is that the magnitude of the dose determines the response. Comparing the dose one may receive from ETS to the magnitude of claimed health effects provides one measure of the accuracy of those claims.

Other studies that have calculated ETS dosage (Arundel et al. 1988) have reported values similar to those calculated here. They also have found wide discrepancies between the level of risk calculated by the epidemiology studies and that which can be supported by dosimetric calculations. Wells (1991) and Repace and Lowrey (1991) have both attempted to address this discrepancy. Wells argues that the majority of the "tar" fraction of ETS may be in the vapor phase. He claims that this vapor phase would be retained 100%, producing the majority of the dose one would receive. Thus, he suggests that particles are not an accurate measure of ETS dose. However, the compounds he lists as candidates for vapor phase tar components are not convincing in terms of their potential human health effects. They also are substances that have only been measured in concentrated sidestream and mainstream smoke, not ambient ETS. Until levels of these compounds are actually shown to increase in the presence of ETS, his argument must be considered speculative.

Repace and Lowrey (1991) calculate a daily inhaled dose of ETS particles between 1.4 and 14 mg/d. Calculations based on literature values of ETS concentrations from this paper indicate an inhaled dose of between 0.1 and 0.06 mg/d. When one considers that only 11% of these particulates are retained, the actual dose becomes 0.01 to 0.006 mg/d or 1/140 to 1/233 of the dose claimed by Repace and Lowrey.

Until the problems of confounding and bias in the epidemiology studies are resolved, dosimetric considerations can be the only independent confirmation of the accuracy of their claims. At this point, it can only be concluded that the estimated dose of ETS one can be expected to receive does not support the health risk claims being made by USEPA (1990) and others.

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AMERICAN CANCER SOCIETY KANSAS DIVISION, INC.

THERE'S NOTHING MIGHTIER THAN THE SWORD

TESTIMONY OF BETTY DICUS, TOPEKA
CHAIRMAN OF THE BOARD
AMERICAN CANCER SOCIETY, KANSAS DIVISION, INC.

HOUSE PUBLIC HEALTH AND WELFARE COMMITTEE
FEBRUARY 10, 1993
HOUSE BILLS 2136 AND 2223

Madam Chairperson and Members of the Committee:

My name is Betty Dicus and I currently serve as Chairman of the Board of Directors for the American Cancer Society, Kansas Division, Inc. We thank you for the opportunity to appear before you in support of House Bills 2136 and 2223. In the interest of your time, I will provide testimony in favor of both bills in my remarks.

Smoking is the most preventable cause of death in our society; in all, smoking now kills an estimated 435,000 Americans each year -- more than alcohol, heroin, crack, automobile and airplane accidents, homicides, suicides, and AIDS combined. In Kansas, approximately 1,700 residents will be diagnosed with lung cancer in 1993; 1,500 will die from the disease, with smoking being responsible for over 1,300 of those deaths.

Attached
2-10-93
Attm #5

1315 SW ARROWHEAD ROAD • TOPEKA, KANSAS 66604-4020
(913) 273-4114 • FAX (913) 273-1503

Provisions in House Bills 2136 and 2223 seek to limit smoking so that non-smokers, who represent the majority of Kansas citizens, will suffer less from the passive inhalation of smoke from others' smoking materials. Current smokers comprise approximately 26% of the U.S. adult population and consume more than one-half trillion cigarettes annually. This translates into a nearly universal exposure to environmental tobacco smoke.

With the EPA's recent classification of environmental tobacco smoke as a known human lung carcinogen, it is even more important that its presence be addressed as a public health matter. We respectfully request this Committee's favorable support of House Bills 2136 and 2223. Thank you.

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Atm #5
HB 2052

TO: PUBLIC HEALTH AND WELFARE COMMITTEE

REPRESENTATIVE FLOWER, CHAIR;

Testimony on Smoking, Esp Second Hand Smoke.

Everytime someone smokes, hazardous particulates are aerosolized into the air. These particulates (which include benzene, formaldehyde, nicotine and carbon monoxide), are released not only from the smoker's exhalations but also from the burning tobacco.

We can place the environmental smoke into two categories: Mainstream and Sidestream. Mainstream smoke is that which the smoker inhales and susequently exhales. This smoke contains all of the particulates and the non-smoker is exposed to this upon exhalation. Sidestream smoke is that enters the environment directly from burning tobacco. This smoke has very high concentrations of harmfull particulates, as well as higher levels of tar and nicotine.

Many studies have documented that both Mainstream and Sidestream Smoke presents a serious health hazzard to non-smokers, in fact, even smokers admit theirsmoking is hazzardous to non-smokers if they are exposed to their smoke. This smoke eminating from the burning tobacco is known as Second-Hand Smoke, as it impacts on non-smokers.

The EPA has stated that:
Second-Hand Smoke is a human carcinogen, responsible for appx. 3000 cancer deaths annually in Non-Smokers in the USA.

Second-Hand Smoke (SHS) is associated with an increased risk of chronic sinusitis, and upper and lower respiratory track infections, such as bronchitis and pneumonia, especially in children. The EPA feels that between 150 to 300,000 cases annually in children are related to SHS.

SHS is related to upper resp tract infections such as middle ear rhinitis, sinusitis, and to non respiratory ailments such as runny eyes and potential cardiac responses such as increased heart rate, and elevated blood pressure.

SHS is associated with exacerbating Astmatic symptoms or bringing Asthmatic episodes on. It is estimated that as many as 200,000 to 1 million children have their condition affected by exposure to SHS.

SHS causes increases in coughing, mucus production, chest discomfort, and sinus swelling in adults, along with a reduction in their pulmonary functions over time.

Non-smokers exposed to SHS have significant amounts of nicotine, carbon monoxide, and other chemicals whose source is smoking.

One must, in todays fiscal environment, be aware of the financial

PHW
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Attm #6

...ct as well as the health impact of smoking. It is estimated that every smoker costs his or her company appx. $1000 per year due to decreased productivity and increased health costs. This does not take into consideration other costs incurred with smoking such as carpet and furniture repair or replacement, computer repair, insurance premiums, and overall employee moral concerns relating to the fact that employers are not sensitive to the wishes of a majority of workers that desire a smoke-free workplace.

We feel, that to better protect and serve the health, safety, and wellfare of every Kansan, especially our children, we must act to reduce as much as we can their exposure to the harmfull and potentially fatal effects of cigarette smoking, either directly or from second-hand smoke

With this in mind, and considering the direct and indirect costs related to smoking, which also impact on non-smokers, this coalition supports Representative Helgersons bills relating to smoking.

RESPECTFULLY SUBMITTED;

Don Richards, MS,RRT

Vice President, Kansas Lung Association BOD 1992-1993

Delegate, Kansas Respiratory Care Society

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2-10-93
Attm #6
Pg. 2 of 2

Statement of Simon Turner
Healthy Buildings International Inc. (HBI)

Concerning the Issue Of Tobacco Smoke in the Internal Environment

Topeka, Kansas
February 10, 1993

I am a Director of Healthy Buildings International Inc., a company that specializes in the study and assessment of indoor air quality. Since we incorporated in 1981, we have studied approximately 1,000 major buildings throughout the world. We serve our clients from five offices located in England, Australia, Spain, Canada and our headquarters office located in Fairfax, Virginia.

For twelve years our activities on behalf of our clients have been devoted to the study of indoor air problems. We analyze the air for fibers of textiles, asbestos, glass and mineral wools, radon, carbon monoxide, exhaust fumes, pesticides, detergents, carpet and furniture emissions, PCBs, volatile organic chemicals, bacteria, fungi and, of course, tobacco smoke. An integral part of our investigations is the study of the ventilation systems, their design, control sequences and operational policies. These experiences are all dedicated to cleaning up the indoor environment which makes our testimony especially relevant to any debate on these issues.

Major corporations such as IBM, GTE, Digital Equipment, Union Carbide, Pepsi Cola plus government agencies including the US Department of Health and Human Services, the Social Security Administration, Longworth Congressional Building, the Supreme Court, the Coast Guard, Customs and Excise headquarters, the Federal Reserve Bank and the United Nations have all retained our services to accomplish the goal of clean indoor air. I suggest that these references plus over 200 other corporate clients would suggest that we qualify as experts in this field. Most of these clients over the last decade have, at one time or another, asked us about the issue of tobacco smoke.

Interestingly some of these clients have chosen to ban smoking. A number of others prefer the practice of restricted smoking areas whereas others continue with discretionary smoking. Three different philosophies yet all have expressed satisfaction with their indoor air quality programs and the resulting quality of their indoor air. How and why?.....because all adopted our primary recommendations of maximizing the capacity of their ventilation systems. Of improving where necessary their filtration standards and invariably all, because of our encouragement, paid greater attention to correct operating practices concerning their ventilation control equipment.

A percentage of our clients called us in to resolve complaints about tobacco smoke. Others had absentee problems. Most were concerned with worker productivity but an ever increasing number of clients feared possible litigation. Now we are already seeing an added influx of enquiries as a result of the Environmental Protection Agency's (EPA) recently published risk assessment concerning environmental tobacco smoke.

However, our advice to all our clients is not to lose sight of the long term objective - a comfortable and productive work-place with reductions in the concentration of all pollutants,

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including smoke. Fortunately, smoke, from the perspective of a ventilation engineer, is a relatively easy component of the indoor air to manage. Microbes, with their incredible capacity to reproduce, coupled to their ability to lie dormant over long periods, are much harder to control. Furthermore, for every building where we have encountered tobacco smoke problems we have experienced tenfold that number of buildings with microbial contamination. These organisms positively cause allergies, certainly can cause infections and indisputably the secreted toxins from some are identified as potent carcinogens. Neither we, nor you, can afford to dismiss any indoor pollutants be they microbes, dusts, fibers or chemicals.

Consider another fact. Less than 40 percent of the 700 USA based buildings that we have studied, allow smoking and this number is dropping. However, we can categorically state that the air in 100 percent of them contain substances considered by the EPA as known or probable human carcinogens. Indeed, no less than 95 percent contained the class A carcinogen benzene. Others, including asbestos, radon, chloroform, trichloroethylene, carbon tetrachloride and styrene are found throughout the buildings we study. These are present regardless of whether smoking is allowed or banned.

Without being too melancholic, perhaps I can remind you that substances thought to be carcinogens are also widespread in the food chain. Mushrooms, nuts, corn, spinach, beets, lettuce, fish and shellfish, oranges, peppers and numerous herbs and spices contain naturally occurring chemicals that have also been classed as carcinogens.

Returning to the implications of the EPA's statement. First let us recognize that the EPA has no statutory authority to regulate indoor air quality. The agency that intends to become involved in such decisions is the Occupational Safety and Health Administration (OSHA). This agency is currently at the formative stage of developing rules on indoor air quality, including tobacco smoke.

OSHA has for many years been charged with the responsibility of monitoring industrial buildings and to protect workers from exposure to many chemicals including known those thought to be carcinogens. They accomplish this by ensuring that such airborne concentrations of carcinogens as benzene, arsenic, asbestos, cadmium, etc., are maintained below so-called Permissible Exposure Limits (PELs); these are usually eight hour time-weighted averages. Also, the National Institute for Occupational Safety and Health (NIOSH) publishes Recommended Exposure Limits (RELs). Perhaps of most relevance, however, are the Threshold Limit Values (TLVs). Interestingly, these TLVs are specifically set to protect worker health. Furthermore, the source of many of these TLVs., the American Conference of Governmental Industrial Hygienists, state that TLVs refer to airborne concentrations of substances below which it is believed that nearly all workers may be repeatedly exposed, day after day, without adverse health affects. There is as yet no TLV for tobacco smoke.

Thus HBI acknowledges the reality of everyday living in which virtually every human is exposed to risks from the food we eat, the liquids we drink and the air that we breathe. Moreover, we strive to make a positive contribution to the latter. By improving ventilation effectiveness, optimizing filtration systems and rationalizing the way we operate our buildings, we improve air quality for all.

With respect to smoking, in the absence of a TLV, we advise prudence such that managers minimize the exposure from tobacco smoke to all non-smokers in commercially viable ways. Certainly we stress the need for good ventilation and filtration practices whether or not smoking is

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allowed. Indeed, a prerequisite of any workplace that wishes to provide a comfortable and productive environment for its staff is to first ensure that generally accepted ventilation rates prevail. Specifically, for offices, restaurants, hotels, bars, etc., the ventilation rates should comply with the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 62-1989 "Ventilation for Acceptable Indoor Air Quality." In the case of offices, ASHRAE stipulates a minimum outside air ventilation rate of 20 cfm/person. This ASHRAE standard allows for a moderate amount of smoking and, when properly adopted, complaints are unusual.

If after improving the air handling characteristics of a building, additional actions are considered necessary, it is not unreasonable to separate smoking and nonsmoking areas or to designate areas for smoking. However, it is important that such designated areas are correctly ventilated. Indeed, many of our clients practice the use of designated smoking areas using local exhaust ventilation.

The smoking lounges can be designed with their own dedicated air supply and exhaust system. Or, as suggested by ASHRAE, they can be incorporated into buildings using the air supplied by the existing ventilation system provided that the air from the lounges is not recirculated to other areas, but is exhausted directly to the outside. The air to the smoking lounge can be either ducted supply air or it can be "transfer air" i.e. air deliberately induced into the lounge from adjoining areas. Since the lounge is equipped with local exhaust capabilities, it is a minor engineering step to ensure that the air pressure within the lounge is kept below the pressures in the adjacent areas. Thereafter the laws of physics preclude any migration of smoke from the lounge to adjacent areas. All the smoke is exhausted outside the building.

Such designs are commonly practiced in many buildings. In our experience in studying hundreds of buildings, we have found nonsmokers and smokers perfectly happy with such an arrangement.

Ladies and gentleman, thank-you for giving me a hearing today. What I have described is a small part of one of many presentations that our company makes for such recognized associations as the American Institute of Architects, ASHRAE, the Association of Energy Managers, the Gas Council, the Air Balance Council, the Building Owners and Managers Association and numerous Fortune Five-hundred corporations. Without exception these groups compliment us on sharing the results of a decade of our research in this way. If however, the tobacco industry asked us to present an identical presentation we are likely to be branded as apologists to that industry. We are not, we are a company that believes in speaking out on truths that we hold dear. Today I appear before you at the request and expense of the Tobacco Institute. However, I assure you that my findings, statements and recommendations are based on our own independent research. Indeed I challenge anyone to debate these issues with me and for anyone to point out where my statements depart from basic common-sense.

Finally, I do wish to point out that if it is the goal of this committee to address the issues of clean indoor air it is imperative that you focus on the real issues. The proliferation of so-called "Clean Indoor Air Acts" which in reality are solely a polite phrase for smoking bans is unfortunate. How is it that cities with such acts still have Sick Buildings, still see buildings closed from PCB spills, schools suffering from fungal infestations, complaints of high absenteeism, even unacceptably high incidence of cross infections in hospitals etc.? Of course, consideration of smoking issues may well form part of a properly constructed Clean Indoor Air Act, but they are a small chapter, not the whole

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story. Any Clean Indoor Air Act that does not specify minimum ventilation rates, minimum filtration standards, and minimum levels of building hygiene with some protocol for inspection to ensure compliance is not worthy of such an altruistic label.

Simon Turner
February 10, 1993

Healthy Buildings International Inc.
10378 Democracy Lane
Fairfax, VA 22030

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My name is Gwen Craig, a Topeka resident. I am a recently retired telephone employee. I'm here as a private citizen to give you my input on House Bill No. 2223 to ban smoking in this beautiful and historical Capitol.

As a child in the fifties, the only detriment ever mentioned then to smoking was 'if you want to be an athlete, don't smoke because it'll shorten your wind'. Since then-"**we've come a long way, Baby**"-we now know the danger and harmful effects of tobacco smoke.

I've never been a smoker but was born to smoking parents and I married a life long smoker. I didn't realize the harm from second hand smoke until about ten years ago. My ear specialist, Dr. Lee, and my allergist, Dr. Ransom, alerted me to the trouble it was causing me.

Last year I was a Capitol tour guide during the '92 Legislative session. I was truly amazed to discover smoking hadn't been banned here when it was banned in the State Offfice Buildings.

If you don't realize what a State treasure we have in this Capitol building just go on a tour sometime and listen to the tourists exclaim over it. Also, they complained about the smoke as they were waiting to go on a tour and through out the building. They also voiced concern for the damage being done to the art work. However, more vocal were the school children. Several thousand from all over the state tour here January thru May. A large number stated in disbelief at the blue gray smokey haze and the choking odor. As an adult we're supposed to be setting a good example. I was embarrassed to tell the children it was legal. I did suggest they contact their legislature when they got home.

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I'm concerned first for the people's health and our state is letting them down. I know several people who on their doctor's advice have had to quit working here on even a part-time schedule due to the residual smoke. Second, I am concerned about our beautiful, historic building. It deserves better care, too!

House Bill No. 2223 is the answer but I do see one major flaw. Why do we have to wait til July of '95? What is wrong with June of '93? This must be one of the easiest bills to enact. Government doesn't need to move this slowly. Show the people of Kansas you care and that you can act now. The people deserve this and this Grand Old Capitol does also!

Gwen Craig

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FEBRUARY 10, 1993

HB 2136
HB 2223

BETSI HOFFMAN
5821 West 25th
Topeka, KS 66614
(913) 272-0998

My name is Betsi Hoffman, and I am a long-time resident of Kansas. This is my first experience before a committee, so please bear with me.

I urge you not to base your decision on HB 2136 on the recently published EPA report on Environmental Tobacco Smoke. There appear to be serious concerns in the data used. The study conducted by the National Cancer Institute found no proof linking secondary tobacco smoke to cancer.

A public opinion poll released in June of 1992 by the American Lung Association showed strong public support for the accommodation of smokers in public places. Public preference for NO restrictions or separate smoking sections out-paced support for total smoking bans by a greater than 2-1 margin.

Restrictions are unfair to smokers; as taxpayers, smokers help support city, county and state buildings. As consumers, they help support malls, stores and restaurants. Why shouldn't they be allowed to smoke in places that they help pay for?

Are we going to enforce this law by taking manpower from the streets?

I do not feel that mandatory restrictions are necessary. Most smokers are polite and if their smoke bothers someone they will usually move or put out the cigarette. Non-smokers should show the same consideration . . . the same willingness to compromise.

Smokers pay first class taxes and are being treated like second class citizens. What has happened to America, the country founded on personal freedom and choice?

I am not asking for an open smoking policy, but I am asking to be treated fairly.

I have attached several articles which I hope you will be interested in seeing before coming to any decision.

Thank you for your time.

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SUNDAY, DECEMBER 6, 1992 The Washington Times

JOHN SHANAHAN

Smoking under the gun

The Environmental Protection Agency (EPA) may soon embark on a politically correct crusade against a popular target: the tobacco industry. If the crusade is successful, the likely result would be a ban on smoking in restaurants and the workplace to protect others from "secondary" smoke.

It is a crusade I well understand. As a nonsmoker who intensely dislikes the smell of other people's fumes, and as the father of a newborn daughter, I have strong personal objections to having my family subjected to secondary smoke. Yet ironically, I cannot in good conscience condone EPA's crusade.

The Science Advisory Board (SAB) at EPA has recommended that EPA Administrator William Reilly list secondary smoke, bureaucratically known as environmental tobacco smoke (ETS), as a Class "A" carcinogen. The board based its recommendation on a yearlong review of the EPA data on the subject. Unfortunately, the board's recommendation was not based on standard scientific methods. Instead, it was based on methods specifically devised by EPA to yield the desired result that secondary smoke causes cancer.

The study on ETS has ramifications beyond the smoking controversy. Why? Because this is the first major risk-assessment study conducted by EPA since the agency issued guidelines earlier this year — and already the EPA is ignoring its own guidelines.

This sets the wrong precedent. And the likely result already can be predicted: Other products similarly will be tarred as "carcinogens" using the same politically correct procedures.

For instance, EPA is now looking into the carcinogenic effects of taking showers. The alleged culprit is the small amount of gas released from volatile organic compounds in shower water. Obviously, most people would be concerned, if not horrified, at the prospect of EPA regulating their showers. Yet the methods used for the secondary-smoke assessment will partly determine the likelihood of such a possibility.

There are many basic problems with the Science Advisory Board's "science." The first problem is that the EPA used a 90 percent confidence "interval" (which is a measure of scientific certainty) in its statistical analyses. Yet the standard confidence interval used by practically all scientists — including EPA scientists — is 95 percent. While lower confidence intervals theoretically can be used, answers derived from these lower confidence intervals are much less reliable. Consequently, scientists don't tend to use them.

The second problem is that the conclusions of the scientific advisory board may have been derived from incorrectly combining numerous dissimilar studies. In scientific inquiry, large studies are not always available, to provide researchers with accurate, reliable data upon which to form their conclusions. In such cases, scientists sometimes combine the statistical information from smaller studies to form a more reliable statistical picture. This process is known as meta-analysis. However, meta-analysis is not an appropriate analytical tool unless the smaller studies are all similarly structured.

Yet in the ETS assessment, the SAB did not provide any information about the underlying studies used in the meta-analysis. There was no way, therefore, for independent researchers to verify whether the smaller studies were similarly structured.

Other problems with the EPA secondary-smoke assessment include: (1) overreliance on exposure data drawn from people's recollection of their exposure to other people's smoke over many decades, (2) bias in the data, due to a failure to properly account for dietary factors that affect cancer rates.

In addition, the EPA "study" already has been overtaken by events that suggest the board's conclusions should be re-evaluated. Within weeks of the Science Advisory Board's report, the National Cancer Institute (NCI) published the results of the largest study ever on secondary smoke. The study of 432 elderly female nonsmokers, which avoids most of the flaws in the EPA assessment, found little or no evidence to support the theory that secondary smoke causes cancer.

Specifically, the NCI study found "no increased risk of lung cancer was associated with childhood passive-smoke exposure," and no link between cancer and exposure of a spouse to secondary smoke for less than 40 pack years (one pack per day for 40 years or two packs for 20 years). The study did find a statistically insignificant increase in cancer risk for spouses exposed for more than 40 pack years.

Obviously, if EPA declares secondary smoke a Class "A" carcinogen, the contentious debate over this issue will tilt in favor of anti-smokers. Thus, it is important whether EPA's science advisory board based its recommendation on sound science — or whether it was acting politically.

More important than the smoking issue, however, is the dangerous precedent being set. If government scientific findings do not adhere to traditional and rigorous scientific methods, then they will represent nothing more than the political leanings of those wielding a malleable tool.

If science is to be credible and valuable to the public policy process, it must pass the test of critical scrutiny, whether we like the answers or not. Think about that the next time you're in the shower.

John Shanahan is an environmental and energy policy analyst at the Heritage Foundation.

VIEWPOINTS

Cigarettes, politics and the Environmental Protection Agency

WILLIAM MURCHISON

So now there's a Democrat poised to take over the Environmental Protection Agency from Bill Reilly. She's Carol Browner, and the question is: Will anyone be able to tell the difference a year hence?

It's hard to see the Democrats mucking up EPA more thoroughly than the Bush Republicans have done. Though of course they can try. Ms. Browner is Vice President-elect Al Gore's former environmental aide. Mr. Gore sees the environment as seriously underregulated.

However, Mr. Reilly does, too. The transition from Bush Republicans to Clinton Democrats should be as smooth as glass at EPA, where it's hard to see the Clintonites carrying out very many political drive-by shootings from which George Bush's men would have shrunk.

Mr. Reilly's regulatory passion shows constantly. What we have at the EPA, mixing science, political science — science is to shape and bend to fit a social trend.

Everybody knows, for instance, that smoking is politically incorrect; the environmental equivalent of endorsing Marge Schott's free speech rights.

Well, the EPA's Science Advisory Board wants Mr. Reilly to list secondary smoke — called, in bureaucratic circles, environmental tobacco smoke (ETS) — as a class "A" carcinogen; a big-time cancer-causer, that is.

I have discovered over the years that smoking is like gun control: No matter how impressively you marshal the evidence, you never convince the other side. Still, you make an impression by lowering the threshold of proof, as EPA did in assessing the risks attendant on breathing your neighbor's fumes.

Likewise, the EPA lumped together a variety of small studies that may or may not have been structured alike, who can tell. A larger, later-released study by the National Cancer Institute, using 432 nonsmoking women, shows at most a "small" connection between cancer and ETS. Yet Mr. Reilly's EPA wants to point a federal fire extinguisher at lighted cigarettes. A Class "A" carcinogen rating is serious business.

An in-house study last spring by the Expert Panel on the Role of Science at the EPA noted that, outside and inside the agency, EPA science is widely viewed as "adjusted to fit policy." Nothing new here, perhaps: Whenever on a jasmine-scented evening science and politics bed down together, you know the illegitimacy rate is about to jump. Matters are all the worse with the EPA, given the teeth-gritting zeal of the Gore gang, who rarely stop to count the economic cost of their nostrums.

Something else today's EPA has in mind for us is controlling indoor as well as outdoor air. You might have gathered as much from the agency's suspicious interest in environmental smoke. A Senate-passed bill last year, sure to be revived in the coming year, would have set up an Office of Indoor Air Quality, under the EPA's control. Lord help us!

University of Georgia economist Dwight R. Lee, in a paper issued by the National Center for Policy Analysis, says giving the EPA authority over indoor air "would be like giving a machine gun to a child." Most of the time, Mr. Lee says, you can remove toxic chemicals just by improving ventilation. Which is cheaper than certain techniques the EPA has come up with for cleansing the great outdoors. Some EPA regulations, Mr. Lee says, require companies to spend $6.5 billion — yes, billion — for every life hypothetically — yes, hypothetically — saved.

Comes now, or soon will, Carol Browner to command this beetling fortress of federal regulation. Can Democrats outregulate Republicans? Usually, although at the EPA it may be tough.

The curious thing is, Bill Clinton is trying, or says he is, to improve the economy, whose health depends now as ever on the ability of businessmen to invest in jobs and output rather than in the appeasement of regulators. The Clinton administration's mind is divided; markets *and* mandates is what the administration appears to want. This could prove in due course the Clinton presidency's undoing. But let's not get too optimistic too soon. Bill Reilly hasn't even cleaned out his desk yet; Carol Browner and Al Gore are still assessing what taxes, what regulations are likeliest to save us from prosperity.

William Murchison's column is distributed by Creators Syndicate.

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SATURDAY, January 30, 1993 ★ THE KANSAS CITY STAR

JERRY HEASTER

Science or smoke screen?

The tobacco industry may have been a victim of bad science when the Environmental Protection Agency recently declared that passive smoking poses a major threat of lung cancer to non-smokers.

Although the mainstream media haven't raised serious questions about the EPA's methodology, an analysis by *Investor's Business Daily* this week indicates that some medical and scientific observers remain skeptical.

If it turns out that the EPA's work is less than valid, the problem goes beyond an unfair use of tax dollars to damage the economic interests of stakeholders in a legal, tax-paying business. If the EPA's science proves to have been shoddy, government also has alarmed many people unduly about the potential harm from environmental tobacco smoke. The report, for instance, has added to worry about passive smoke in the workplace, but none of the studies used by EPA involved the workplace. Neither did the EPA's work concern itself with effects on children.

While nearly everyone agrees that smoking is bad for the health, the objections to the EPA initiative have to do with method and motivation. After setting itself up to be able to claim that some 3,000 deaths occur annually because of passive smoking, the government can easily justify regulatory intervention to deal with the problem. And given the lethal nature of the perceived threat, who would be foolish enough to object?

But if the problem isn't real, society has been badly served by its government. And the questions raised by Michael Fumento in *Investor's Business Daily* are cause for serious concern regardless of how anybody feels about tobacco companies or smokers.

Fumento reported that one major flaw in the EPA effort was how it took 11 studies of spouses of smokers and presented them as a body of evidence to make its case. In fact, Fumento said, only one of the 11 studies showed a statistically significant increase in cancer. The rest were described as statistically neutral.

Meanwhile, the tobacco industry has complained that the EPA left out of its analysis a study in November's *American Journal of Public Health* that if included with the 11 other studies would have resulted in no statistically significant findings. The EPA's response, not surprisingly, was that it was too far along in its work to include this data.

Another criticism was the EPA's lack of attention to other contributing factors associated with lung cancer. These range from nutrition to family history to exposure to other carcinogens such as asbestos or radon.

Perhaps most damaging to the credibility of the EPA research, however, was the way the agency departed from the "confidence intervals" usually used. Instead of using an interval of 95 percent, Fumento said, it went with a 90 percent confidence interval when averaging the studies. The difference is critical, Fumento says, because if the EPA had used the 95 percent standard, the result wouldn't have been statistically significant and passive smoking wouldn't have qualified as a type A carcinogen.

The positive aspect of this sort of challenge is its fresh perspective. While secondhand smoke may still be highly disagreeable to many, it's good to know that exposure may not be the life-threatening experience claimed by the EPA.

There's nothing wrong, of course, with government trying to promote the general welfare. But using tax dollars to finance questionable government efforts to undermine the interests of those engaged in legitimate business does not further this constitutional mandate.

Jerry Heaster's column appears Wednesdays, Fridays and Saturdays in the Business section.

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bruary 10, 1993
Hearing on HB 2136 and HB 2223
Public Health & Welfare Committee

Rev. Richard Taylor
4831 SE 61st
Berryton, Kansas 66409

I am a retired member of the Kansas West Conference of the United Methodist Church. I served 8 years as pastor of the Grand Avenue United Methodist Church in Salina, 8 years as pastor of the First United Methodist Church in Concordia, and 5 years as Senior Pastor of the University United Methodist Church in Wichita.

The voice is a mighty important tool for this profession. I was born and raised on a Kansas farm, with a voice that could yell from the barnyard and reach Dad on the back 40. I never smoked, never bought a pack of cigarettes.

At the end of the 1974 legislative session, I had a bit of a voice problem. A syllable seemed to catch in my throat at times. Thinking it was fatigue from the stress of the session and would soon clear up, I let it go until my wife said we had better check it out.

Dr. Kerschner at the Kansas University Medical Center, with a tiny mirrow, pulled out my tongue and said he could see a lesion on a vocal chord. He asked, "Do you smoke?" When my response was NEVER, he said such a lesion is always benign in a non-smoker, but a lab test should be performed - "come back in 10 days."

When my wife and I returned, Dr. Kerschner looked me in the eye and said, "You have cancer on a vocal chord. Leave it there and it will kill you. Remove it and we'll hope for the best."He said second hand smoke may have caused the cancer. Since 1974, research has even more solid evidence of the danger of second hand smoke.

As a lobbyist during the sessions of 1971, 1972, 1973, and 1974 I remember well how it was difficult to see from the back to the front of legislative hearing rooms because of the dense smoke from lawmakers, reporters, and others. You can understand why in 1987 I spent a lot of time and energy helping the legislation through both houses that tried to restrict smoking in public places.

Opposition, if any, to HB 2136 and HB 2223 will come from those who make millions of dollars pushing their deadly drug, not caring how much misery and death their product causes AND from persons who demand rights but refuse to accept responsibility for choices they make.

Persons who demand their right to smoke in public places but refuse to accept responsibility for misery and death they cause others do not deserve any rights.

The front page of the Wall Street Journal on December 28, 1973 said, "A colorful orator with a hearty baritone voice, Mr. Taylor finds his natural forum in church pulpits around the state." He had attended the Overbrook United Methodist church with me.

Here is the voice that reporter heard. This tape is from my sermon in the First Baptist Church of Wichita on November 21, 1971.

(Play few minutes of tape)

I wish all smokers would live together in one state and let non-smokers live in a state with total freedom from tobacco. I'd gladly give them Texas if they would give us Kansas.

Did I lose a vocal chord because others demand their right to blow smoke in my face? I don't spit in their coffee. Why should persons be permitted to smoke in public places when the price paid by non-smokers is misery and death? VOTE YES ON BOTH MEASURES!

Respectfully yours, Richard Taylor

PS For the sake of children, smokers ought to be required to go outside their home to smoke.

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This is Governor Hayden giving me the pen he used to sign the public smoking bill 2412 into law on april 14, 1987. I'm using that pen to write this. Richard Taylor

THE WICHITA EAGLE-BEACON Wednesday, April 15, 1987

By Ramona Jones
Of Our Topeka Bureau

TOPEKA — Gov. Mike Hayden signed a bill into law Tuesday that sets a $20 fine for smokers who light up in public buildings outside designated smoking areas.

The new law, which goes into effect July 1, restricts smokers to designated areas in any enclosed public area, including offices, shopping malls, grocery stores and restaurants. It also flip-flops the current law and requires that restricted areas be designated for smoking rather than for non-smoking.

At the signing ceremony in his office Tuesday, Hayden said the new law not only will protect the citizens of Kansas from second-hand smoke in public places, but will curb alcohol and drug abuse.

"Tobacco is the gateway to illicit and illegal drugs," Hayden said.

Hayden, once known for the chaw of tobacco he used to keep tucked in his cheek, said he gave up chewing tobacco two years ago, both because it was bad for his health and it set a bad example for youngsters.

The Rev. Richard Taylor, most noted for his anti-liquor crusades, attended the signing, saying the bill "has given me more personal satisfaction than any event in my 17 sessions working for the prevention of alcoholism, prevention of highway tragedy, prevention of gambling suffering."

Taylor, who has never been a smoker, blames smoke-filled legislative committee rooms for contributing to the cancer that was discovered on one of his vocal chords in 1974.

The Wall Street Journal described Taylor in 1973 as "a colorful orator with a hearty baritone voice." The cancerous vocal chord was removed in 1974, and Taylor's voice now is a raspy whisper.

"This is a great day for me personally," Taylor said. "If I lost a powerful baritone voice because others believed they had the right to blow smoke in my face, times are changing!"

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TESTIMONY ON HB 2136
REPRESENTATIVE TED POWERS
Room 446-N (7686)

Thank you Madame Chairman and Public Health and Welfare Committee for hearing HB 2136, Smoking in Public Places.

Seems most fitting that this bill should come before the Committee at this time.

Nothing is more important than the air we breath. Ben Franklin said "if man were made to smoke, God would have turned his nostrils to the sky like a chimney". I am not here to ban smoking, just to remove it from you, our peers, children, and grandchildren in the Public Place.

Even alcohol is not as immediate a danger to us as ETS (Enviromental Tobacco Smoke). I call your attention to the fact sheet as presented - - - -

Now I call your attention to Kansas Statutes, Vol. 2A, Pg. 275. Seems like there is a question as to a public place. Before we start. This Bill is strindgent--I make no apologies for that, but just observe as you leave this room today. - - - - 21-4009.

I call your attention to HB 2136 - - - - .

In closing, may I say ETS is by far our most immediate danger. 'I guess' a person should be allowed to smoke but not in public where it is a detriment to us all. Hillary is on the move, EPA is on the move, let Kansas be on the move for the betterment and protection of you, me, and our children.

Smoking is not the issue. The elimination of ETS in the public place is not our issue, it is a mission. Please help. Thank you.

Representative
Ted Powers

P.S. This Mission is dedicated to my friend, the late Chuck Glaser, a chain smoker of 62 years who died last October from emphysemic lung cancer and to my friend Leatha Gammon, a non-smoker, who died from emphysemic non-smokers' lung cancer three years ago. They both drowned. It took nine-horrid months, but they both drowned of ETS.

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Tobacco Free Kansas

900 SW Jackson, Room 1051, Topeka, KS 66612-1290 913/296-1200 FAX 913/296-1231

TOTAL BAN ON SMOKING IN THE STATE CAPITOL AND ALL STATE OWNED BUILDINGS AND OTHER TOBACCO-CONTROL LEGISLATION

FACT SHEET

ETS is a human lung carcinogen, responsible for approximately 3,000 lung cancer deaths annually in U.S. nonsmokers. There only 15 substances named as class A carcinogens, among these are asbestos and radon.

Secondhand smoke causes 30 times as many lung cancer deaths as all other regulated air pollutants combined.

Body fluids of nonsmokers exposed to cigarette smoke contain significant amounts of nicotine, carbon monoxide, and other evidence of passive smoking.

More that 90 % of Americans favor restricting or banning smoking in public places.

In 1991 Smoking-attributable illness cost Kansans $594 million.

Policies enacted to reduce exposure to secondhand smoke may encourage smokers to quit, thus **increasing their overall well-being** and **decreasing their susceptibility to cancer.**

Workers exposed to **secondhand smoke** on the job are **34 percent more likely to get lung cancer.**

The simple separation of smokers from nonsmokers within the same airspace will reduce, **but cannot eliminate,** the exposure of nonsmokers to secondhand smoke.

Of state employees, smokers incur 33% more hospital admissions and average 41% more hospital days than non-smokers. In 1991, the total medical claim payment averaged $280.62 more for smokers than for non-smokers.

More than **60% of Kansan adults** who work outside the home are **exposed to ETS in their workplace.**

82% of Kansans are willing to create a special purpose tax on items such as cigarettes and alcohol, in order to create a basic standard for all Kansans.

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Coalition Members

American Cancer Society, Kansas Division

American Heart Association Kansas Affiliate, Inc.

American Lung Association of Kansas

Cancer Information Service

Dickinson County Council on Alcohol and Drugs, Inc.

Extension Human Development and Family Studies, Kansas State University

Governor's Office of Drug Abuse Programs

Group to Alleviate Smoking Pollution

Kansas Academy of Family Physicians

Kansas Association of Local Health Departments

Kansas Dental Association

Kansas Department of Administration

Kansas Department of Health and Environment

Kansas Department of Human Resources

Kansas Employer Coalition on Health

Kansas Health Foundation

Kansas Respiratory Care Society

Kansas State Board of Education

Kansas State Nurses Association

Kansans for Non-smokers Rights

National Council on Alcoholism

New Mondays Seminars

Preventative Cardiology, PA

Project Freedom

Smoky Hill Family Practice Residency Program

Stormont-Vail Regional Medical Center

Topeka-Shawnee County Health Department

University of Kansas Medical Center

Wichita-Sedgwick County Dept. of Community Health

convicted of crime. Obtaining money or other thing of value by this means is a species of theft and is prohibited by section 21-3701.

This section restates part of former K.S.A. 21-2451.

21-4007. Hypnotic exhibition. (1) Hypnotic exhibition is:

(a) Giving for entertainment any instruction, exhibition, demonstration or performance in which hypnosis is used or attempted; or

(b) Permitting oneself to be exhibited for entertainment while in a state of hypnosis.

(2) "Hypnosis," as used herein, means a condition of altered attention, frequently involving a condition of increased selective suggestibility brought about by an individual through the use of certain physical or psychological manipulations of one person by another.

(3) Hypnotic exhibition is a misdemeanor punishable by a fine of not to exceed fifty dollars ($50).

History: L. 1969, ch. 180, § 21-4007; L. 1978, ch. 125, § 1; July 1.

Source or prior law:

21-2471, 21-2472, 21-2473, 38-703.

21-4008.

History: L. 1975, ch. 310, § 1; Repealed, L. 1987, ch. 110, § 7; July 1.

21-4009. Smoking in a public place; definitions. As used in this act: (a) "Public place" means enclosed indoor areas open to the public or used by the general public including but not limited to: Restaurants, retail stores, public means of mass transportation, passenger elevators, health care institutions or any other place where health care services are provided to the public, educational facilities, libraries, courtrooms, state, county or municipal buildings, restrooms, grocery stores, school buses, museums, theaters, auditoriums, arenas and recreational facilities.

(b) "Public meeting" includes all meetings open to the public.

(c) "Smoking" means possession of a lighted cigarette, cigar, pipe or any other lighted smoking equipment.

History: L. 1987, ch. 110, § 1; July 1.

21-4010. Same; smoking in public place prohibited, exceptions; designated smoking areas. (a) No person shall smoke in a public place or at a public meeting except in designated smoking areas.

(b) Smoking areas may be designated by proprietors or other persons in charge of public places, except in passenger elevators, school buses, public means of mass transportation and any other place in which smoking is prohibited by the fire marshal or by other law, ordinance or regulation.

(c) Where smoking areas are designated, existing physical barriers and ventilation systems shall be used to minimize the toxic effect of smoke in adjacent nonsmoking areas.

History: L. 1987, ch. 110, § 2; July 1.

Attorney General's Opinions:

Statutes are penal, subject to strict construction; designated smoking area is not limited, subject to existing local regulation. 87-89.

21-4011. Same; posting smoking prohibited signs and designated smoking area signs; proprietor or person in charge of public place authorized to establish designated smoking area. The proprietor or other person in charge of the premises of a public place shall post or cause to be posted in a conspicuous place signs clearly stating that smoking is prohibited by state law. The person in charge of the premises shall also post or cause to be posted in any designated smoking area, signs stating that smoking is permitted in such room or area. The proprietor or person in charge of the public place shall have the authority to establish the percentage of area in the public place which shall be posted and designated as a smoking area.

History: L. 1987, ch. 110, § 3; July 1.

21-4012. Same; unlawful acts; penalties; action to enjoin repeated violations. Any person found guilty of smoking in violation of this act is guilty of a misdemeanor punishable by a fine of not more than $20 for each violation. Any person found guilty of failing to post signs as required by this act, is guilty of a misdemeanor punishable by a fine of not more than $50. In addition, the department of health and environment, or local department of health, may institute an action in any court of competent jurisdiction to enjoin repeated violations of this act.

History: L. 1987, ch. 110, § 4; July 1.

21-4013. Same; local regulation of smoking. Nothing in this act shall prevent any city or county from regulating smoking within its boundaries, so long as such regulation is at least as stringent as that imposed by this act. In such cases the more stringent local regulation shall control to the extent of any inconsistency between such regulation and this act.

History: L. 1987, ch. 110, § 5; July 1.

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30 copies
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3 RS 0319

HOUSE BILL NO. 2136

By Representative Powers

AN ACT concerning crimes and punishment; relating to smoking in public places; amending K.S.A. 21-4010, 21-4011 and 21-4013 and repealing the existing sections.

Be it enacted by the Legislature of the State of Kansas:

Section 1. K.S.A. 21-4010 is hereby amended to read as follows: 21-4010. ~~(a)~~ No person shall smoke in a public place or at a public meeting ~~except in designated smoking areas.~~

~~(b) Smoking areas may be designated by proprietors or other persons in charge of public places, except in passenger elevators, school buses, public means of mass transportation and any other place in which smoking is prohibited by the fire marshal or by other law, ordinance or regulation.~~

~~(c) Where smoking areas are designated, existing physical barriers and ventilation systems shall be used to minimize the toxic effect of smoke in adjacent nonsmoking areas.~~

Sec. 2. K.S.A. 21-4011 is hereby amended to read as follows: 21-4011. The proprietor or other person in charge of the premises of a public place shall post or cause to be posted in a conspicuous place signs clearly stating that smoking is prohibited by state law. ~~The person in charge of the premises shall also post or cause to be posted in any designated smoking area, signs stating that smoking is permitted in such room or area. The proprietor or person in charge of the public place shall have the authority to establish the percentage of area in the public place which shall be posted and designated as a smoking area.~~

Sec. 3. K.S.A. 21-4013 is hereby amended to read as follows: 21-4013. Nothing in this act shall prevent any city or county from regulating smoking within its boundaries, so long as such

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regulation is at least as stringent as that imposed by ~~this--act~~ K.S.A. 21-4010, and amendments thereto. In such cases the more stringent local regulation shall control to the extent of any inconsistency between such regulation and ~~this--act~~ K.S.A. 21-4010, and amendments thereto.

Sec. 4. K.S.A. 21-4010, 21-4011 and 21-4013 are hereby repealed.

Sec. 5. This act shall take effect and be in force from and after its publication in the statute book.

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KANSAS RESTAURANT AND HOSPITALITY ASSOCIATION

KANSAS RESTAURANT AND HOSPITALITY ASSOCIATION

359 SOUTH HYDRAULIC • P.O. BOX 235 • WICHITA, KANSAS 67201 • (316) 267-8383 • FAX (316) 267-8400

KRHA Legislative Hotline: 1(913)354-1151

My name is George Puckett and I represent the Kansas Restaurant and Hospitality Association, a statewide group of approximately 750 foodservice and hospitality industry businesses.

Foodservice operators are confronted daily with the conflict between one individual's right to smoke and another's right to a smoke-free environment. The KRHA advises its members to resolve this question after considering the wishes of their clientele and the nature of the particular establishment. The Association also contends that government should leave individual foodservice establishments free to work out arrangements in regard to smoking that suit their clientele and operations. A small family restaurant might have a completely different set of requirements on this matter compared to a restaurant with a liquor license, or a sports bar type operation. As responsible business operators it is imperative our members provide adequate accommodation for all customers, smoking and non-smoking alike. We cannot afford to alienate any segment of our customer base.

The KRHA is an affiliate of the National Restaurant Association. On February 10, 1993, the Board of Directors of the NRA voted to inform its membership of several new factors that should be taken into consideration when reviewing smoking policies in foodservice establishments: 1) In January, 1993, the U.S. Environmental Protection Agency (EPA) issued a report entitled "Respiratory Health Effects of Passive Smoke: Lung Cancer and Other Disorders." 2) As a result of this report the U.S. Secretary of Labor directed the Occupational Safety and Health Administration (OSHA) to "commence any potential rule-making to address the issue of second-hand smoke." A survey is being conducted by NRA, following the EPA report, asking what percentage of restaurant patrons would be "somewhat" or "a lot less likely" to go to a restaurant that banned smoking versus other restaurants that allowed smoking. Those results are not complete as the survey was only mailed out in January. The

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figure is estimated to be higher in restaurants that attract more than the average number of smoking patrons. It is expected to be lower in restaurants that attract more than the average number of non-smokers.

Large sums of money have been spent by Kansas restaurant owners in recent poor economic times to purchase expensive air exchange systems and to redesign current buildings or to plan new construction to insure the comfort of their valued smoking and non-smoking customers alike.

I would conclude by saying that previous legislation such as HB2136 has followed a disturbing trend for foodservice operators. If the measure can't get the legislative support of what it originally sets out to do, someone inevitably amends it to get the "bad guys",... and restaurants have been typically singled out as the scapegoat. I am particularly in defense of our members from anything such as this happening again,... especially today when restaurants have made the necessary changes, and have done their part to conform to current state smoking laws and local ordinances.

The bottom line fact is, our restaurant and bar owner members throughout the state of Kansas are prudent businesspeople, and sound business principles would dictate that we must satisfy out guests' needs, smokers and non-smokers alike.

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KANSAS STATE BOWLING PROPRIETORS ASSOCIATION, INC.
MAILING ADDRESS: P.O. BOX 40429 • OVERLAND PARK, KS 66204-4429
STREET ADDRESS: 9401 SANTA FE DR., L102 • OVERLAND PARK, KS 66212
PHONE: (913) 642-3390

SANDRA BUTCHER
Executive Director

MEMORANDUM

TO: MEMBERS OF PUBLIC HEALTH AND WELFARE COMMITTEE

FROM: REX HANEY, LEGISLATIVE CHAIRMAN, KANSAS STATE BOWLING PROPRIETORS

RE: SMOKING IN PUBLIC PLACES

DATE: FEBRUARY 10, 1993

I am appearing today on behalf of the Kansas State Bowling Proprietors to urge you to leave the designated smoking areas in public places. I have been involved with the bowling industry for over twenty years in a day to day management capacity. In addition, I helped create a stronger Topeka City Ordinance in regards to non-smoker rights in league bowling and open bowling.

I am of the opinion that the imposition of the current bill in its present form would create many difficulties for bowling centers. We know we have a problem and we are trying to solve this issue in a timely manner. Most centers have in their league contracts or league rules that bowlers may not smoke in the bowlers area while bowling in league play. We do not allow the bowlers to smoke in our restrooms or in designated areas in our restaurants. In Topeka the ordinance was written to allow the bowlers that don't smoke to be placed at opposite ends of the bowling center as we schedule our open bowling on the lanes. Many centers are placing air cleaning units in the bowlers area or concourse of each bowl. As we replace our air conditioning systems we are adding more fresh air and different filter system to make air quality more efficient. In the future an area needs to be made available for smokers to ventilate their smoke out of the center.

We need time to have studies made in our centers, through focus groups and surveys to determine how we can best change the behavior and attitude of our current customer base. If we are not given this time the following things will happen.

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1. A large loss of league bowlers. In a very small market where smoking is not permitted in bowling centers, but still allowed in the bar area, the numbers are found to be in the 15% dropout rate per year for a 2 year period. This loss of 30% over 2 years could send many of our centers out of operation. We generate 65 to 80% of our business from our league bowlers that bowl 33 to 35 weeks consecutively. Bowlers bowl league with their friends and fellow workers and each league session lasts from 2 to 2 1/2 hours. The non-smoker is very supportive of the bowlers that smoke and many would quit bowling if their friend decides not to bowl.

A straw poll was taken at Colby Bowl, Colby and Centennial Lanes, Hays on Thursday, February 9th, by two non-smoking proprietors, Charles Schmanke and Bruce Herreman. Bowlers were read House Bill 2136 and asked to answer the following questions.

COLBY BOWL		CENTENNIAL LANES	
SMOKERS	30	SMOKERS	N.A.
NON-SMOKERS	30	NON-SMOKERS	N.A.
TOTAL BOWLERS	60 (12 TEAMS)		80 (16 TEAMS)

1. WOULD YOU BOWL NEXT YEAR IF THIS FACILITY WAS NON-SMOKING?

COLBY		HAYS	
YES	40	YES	78
NO	20	NO	2

2. WOULD YOU BOWL NEXT YEAR IF YOUR TEAMMATE THAT DOES SMOKE WOULD QUIT BOWLING?

COLBY		HAYS	
YES	30 (10 NON SMOKERS)	YES	78
NO	30	NO	2

*COLBY BOWL WOULD FIELD 8 OUT OF 12 TEAMS NEXT YEAR WITH SOME OF THE 8 TEAMS HAVING TO FIND BOWLERS.

3. IF A PERCENTAGE OF BOWLERS WOULD NOT BOWL BECAUSE OF THE NEW LAW, WOULD YOU CONTINUE TO BOWL IF THE PRICE OF BOWLING AND FOOD & BEVERAGE WENT UP BECAUSE OF THE LOSS OF BOWLERS?

	COLBY	HAYS
YES, A FACTOR	- 40	72
NO, NOT A FACTOR	- 20	8

4. IS BOWLING IN CENTERS WHERE THEIR IS NO SMOKING A FACTOR IF YOU BOWL?

COLBY	HAYS
YES - 6	YES - N.A.
NO - 54	NO - N.A.

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The Kansas State Women's Bowling Association has added a non-smoking policy to their tournament effective in 1992. This tournament was held in Topeka and was probably the most hostile tournament environment that I have ever seen at a bowling tournament. This years tournament will be held in Wichita and has 1561 teams enter compared to 1805 teams enter in 1990. Is this a result of the non-smoking policy or the current economic problems we are not sure. We need to find out the reason for the decline in entries.

What we are saying is that the data we need to make a decision on how this law will effect our industry in not available anywhere. We need time to make the studies and check on how to handle our smoking customers needs. We are here to serve the public that wants to bowl and we need some time to figure out just how to serve both the non-smoker and smoker. Working together we can solve this problem for the bowlers of Kansas.

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Kansas Tobacco-Candy Distributors & Vendors, I

Elizabeth E. Taylor - Executive Director

KANSAS TOBACCO CANDY ktcdv DISTRIBUTORS and VENDORS, INC

President
TOM GUTHRIE (06-94)
Kansas City, Kansas

Vice President
FRANK ROTH (06-94)
Salina, Kansas

Secretary
DAVID GREENE (06-93)
El Dorado, Kansas

Treasurer
RONALD OSWALD (06-93)
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Chairman of the Board of Directors
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Marysville, Kansas

Directors
DOYLE PEPPER (06-93)
Topeka, Kansas

GEORGE LAWRENCE (06-93)
Hutchinson, Kansas

BILL WESTERMAN (06-93)
Chanute, Kansas

DON RIPPLE (06-94)
Wichita, Kansas

JOHN FRAZEE (06-94)
Paola, Kansas

JOE GREGORY (06-94)
Pittsburg, Kansas

Directors at Large
KENNETH HAGMAN
Pittsburg, Kansas

DAVE MINICH
Overland Park, Kansas

FRED STEVENS
Wichita, Kansas

GALE CYNOVA
Junction City, Kansas

JOE WESTERMAN
Iola, Kansas

February 10, 1993

TO: House Public Health & Welfare Committee Members
Honorable Representative Joann Flower, Chair

FR: Elizabeth E. Taylor, Executive Director

RE: Opposition to Banning Consumption of Legal Products

Thank you for the opportunity to oppose the provisions of HB 2136. The Kansas Tobacco & Candy Distributors and Vendors Association is made up of those grocery wholesalers and vendors supplying a variety of products including groceries, tobacco, candy, institutional food products, paper goods, health and beauty aids among others to the retail market, and thereby the people of the state of Kansas.

Our opposition to HB 2136 stems from the economic impact of banning legal use of legal products. Although wholesalers across the state vary in the percentage of business which the specific product of tobacco derives, we are concerned about the loss of revenue, loss of profit and the loss of tax income we pay to the state through product taxes, sales taxes and income taxes due to a potential diminishing of the sale of the product.

We believe that with current trends toward providing building construction utilizing ventilation methods, and by the move toward providing designated areas for adults to participate in the consumption of this legal product, that the perceived danger to non-smokers has already been reasonably dealt with.

Therefore, we ask that you allow the supply and demand theory for product sales and the supply and demand theory of public behavior to govern the sale and use of all legal products by adults rather than taking upon yourself the task of regulating the public's right to choose.

Again, thank you for the opportunity to provide our position on the topic.

913-354-1605 (FAX 913-354-4247) 933 Kansas Avenue Topeka, KS 66612

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Testimony for the House
Public Health and Welfare Committee

by George Potts
Wichita-Sedgwick County Board of Health

Ladies and Gentlemen, I am George Potts, a member of and speaking for the Wichita-Sedgwick County Board of Health. Thank you for the opportunity to address the committee. I am here today to support House Bill 2136, which will prohibit smoking in public places.

Kansas was one of the early leaders in limiting smoking in public, back when the current law was passed. However, we have now fallen behind other states. Under the law today, we still must experience smoke-filled air in some public places such as airports, shopping malls, and even some restaurants and convenience stores, which have posted signs (in compliance with the law) which say that in this place of business, smoking is permitted.

As you consider Bill 2136, please be reminded that most Kansans don't smoke. Seventy-four percent or nearly three-quarters of our adults don't smoke, plus virtually all of our children. We Kansans recognize that smoking is the greatest modifiable risk, causing more disability and premature deaths than any other single factor. Smoking contributes to the top four causes of death in our state: heart disease, cancers, stroke and accidents.

While this legislation will reduce exposure of adults to Environmental Tobacco Smoke (ETS), we must also be mindful of the effect smoke has on children in the home. Children living with smoking adults suffer higher rates of middle ear infection, upper respiratory infection and asthma. Medical treatment for these smoking related illnesses in children adds more cost to our already over burdened illness care system.

Now a new element has entered the equation: the Environmental Protection Agency has found that ETS, so called secondhand smoke, is a Group A carcinogen, that is, a substance known to cause cancer in humans just like benzene and asbestos. Those of us who choose not to smoke ourselves don't want to be forced to breathe the smoke of others as we go about our daily lives, and I am sure you don't either. Taking action now to protect the public from smoke could

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prevent the problem later of businesses and government being legally liable for illnesses caused by ETS.

We know that change, such as called for in this Bill, brings discomfort, but, this is the right thing to do. Please vote for House Bill 2136 to ban smoking in public places. I have attached more detailed data for the record. Thank you for your attention.

February 8, 1993

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The EPA's Primary Findings Printed Verbatim

On June 18, 1992 the **U.S. Environmental Protection Agency (EPA)** issued its revised draft report on the dangers of **environmental tobacco smoke (ETS).** To make their primary findings quickly and widely available, **Action on Smoking and Health (ASH)** reprints them below verbatim.

To assist antismoking organizations, legislators and other government officials, business leaders, and others who may need more complete information, ASH has also reprinted the full and complete text of **Chapter I. SUMMARY AND CONCLUSIONS** of the report. Copies of the **SUMMARY AND CONCLUSIONS** are available from ASH at a cost of **$1.00 each,** with a **minimum order of $5.00.**

1.2. PRIMARY FINDINGS

A. Lung Cancer In Nonsmoking Adults

1. Passive smoking is causally associated with lung cancer in adults, and ETS, by the total weight-of-evidence, belongs in the category of compounds classified by EPA as Group A (known human) carcinogens.

2. An estimated range of 2,500 to 3,300 lung cancer deaths per year among nonsmokers (never-smokers and former smokers) of both sexes are attributable to ETS in the United States.

The confidence in this range is medium to high with approximately 3,000 annual lung cancer deaths representing the best estimate.

B. Noncancer Respiratory Diseases and Disorders

1. Exposure of children to ETS from parental smoking is causally associated with:

a. increased prevalence of respiratory symptoms of irritation (cough, sputum, and wheeze),

b. increased prevalence of middle ear effusion (a sign of middle ear disease), and

c. a small but statistically significant reduction in lung function as tested by objective measures of lung capacity.

2. ETS exposure of young children and particularly infants from parental (and especially mother's) smoking is causally associated with an increased risk of lower respiratory tract infections (pneumonia, bronchitis, and bronchiolitis).

This report estimates that exposure to ETS contributes 150,000 to 300,000 lower respiratory tract infections annually in infants and children less than 18 months of age, resulting in 7,500 to 15,000 hospitalizations.

These higher risks continue at a decreasing rate for children until about age 3, but no estimates are derived for children over 18 months.

3.a. Exposure to ETS is causally associated with additional episodes and increased severity of asthma in children who already have the disease.

This report estimates that ETS exposure exacerbates symptoms in approximately 20% of this country's 2 million to 5 million asthmatic children and is a major aggravating factor in approximately 10%.

b. In addition, the epidemiologic evidence is suggestive but not conclusive that ETS exposure increases the number of new cases of asthma in children who have not previously exhibited symptoms.

Based on this evidence and the known ETS effects on both the immune system and lungs (e.g. atopy and airway hyperresponsiveness), this report concludes that ETS is a risk factor for the induction of asthma in previously asymptomatic children.

Data suggest that relatively high levels of exposure are required to induce new cases of asthma in children.

This report estimates that previously asymptomatic children exposed to ETS from mothers who smoke at least 10 cigarettes per day will exhibit a probable range of 8,000 to 26,000 new cases of asthma annually.

The confidence in this range is medium and is dependent on the conclusion that ETS is a risk factor for asthma induction.

4. Passive smoking has subtle but significant effects on the respiratory health of nonsmoking adults, including coughing, phlegm, chest discomfort, and reduced lung function.

This report also has reviewed data on the relationship of maternal smoking and sudden infant death syndrome (SIDS), which is thought to involve some unknown respiratory pathogenesis.

The report concludes that while there is strong evidence that infants whose mothers smoke are at an increased risk of dying from SIDS, available studies do not allow us to differentiate whether and to what extent this increase is related to in utero versus postnatal exposure to tobacco smoke products.

Consequently, at this time this report is unable to assert whether or not ETS exposure by itself is a risk factor for SIDS independent of smoking during pregnancy.

Postnatal exposure may potentiate effects of in utero tobacco smoke exposure, or it may not have any additional effect.

Regarding an association of parental smoking with either upper respiratory tract infections (colds and sore throats) or acute middle ear infections in children, this report finds the evidence inconclusive.

To obtain a **FREE** copy of the entire report, please write to **EPA, 26 W. Martin Luther King Drive, Cincinnati, OH 45268.** You may also request a copy by **PHONE (513) 569-7562** or **FAX (513) 569-7566.**

Be sure to request a copy of EPA document **600/6-90/006B.**

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Facts About Secondhand Smoke

Some of the key facts about secondhand tobacco smoke and its dangers are summarized below. Use them to inform your family and friends and to work for smoke-free policies in your community.

General

Secondhand smoke is a cause of disease, including lung cancer, in healthy nonsmokers. Each year secondhand smoke kills an estimated 3,000 adult nonsmokers from lung cancer.

Secondhand smoke causes 30 times as many lung cancer deaths as all regulated air pollutants combined.

Secondhand smoke causes other respiratory problems in nonsmoking adults: coughing, phlegm, chest discomfort, and reduced lung function.

For many people, secondhand smoke causes reddening, itching, and watering of the eyes. About eight out of 10 nonsmokers report they are annoyed by others' cigarette smoke.

More than 4,000 chemical compounds have been identified in tobacco smoke. Of these, at least 43 are known to cause cancer in humans or animals.

At high exposure levels, nicotine is a potent and potentially lethal poison. Secondhand smoke is the only source of nicotine in the air.

Nonsmokers exposed to cigarette smoke have in their body fluids significant amounts of nicotine, carbon monoxide, and other evidence of passive smoking.

Three out of four nonsmokers have lived with smokers, and nearly half (45 percent) are worried that secondhand smoke might cause them serious health problems.

More than 90 percent of Americans favor restricting or banning smoking in public places.

46 states and the District of Columbia in some manner restrict smoking in public places. These laws range from limited prohibitions, such as no smoking on school buses, to comprehensive clean indoor air laws that limit or ban smoking in virtually all public places.

Laws restricting smoking in public places have been implemented with few problems and at little cost to state and local government.

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Smoking policies may have multiple benefits. Besides reducing exposure to secondhand smoke, such policies may alter smoking behavior and public attitudes about tobacco use. Over time, these changes may contribute to a significant reduction in U.S. smoking rates.

Children

Each year, exposure to secondhand smoke causes 150,000 to 300,000 lower respiratory tract infections (such as pneumonia and bronchitis) in U.S. infants and children younger than 18 months of age. These infections result in 7,500 to 15,000 hospitalizations yearly.

Chronic cough, wheezing, and phlegm are more frequent in children whose parents smoke.

Children exposed to secondhand smoke at home are more likely to have middle-ear disease and reduced lung function.

Secondhand smoke increases the number of asthma attacks and the severity of asthma in about 20 percent of this country's 2 million to 5 million asthmatic children.

Each year. U.S. mothers who smoke at least 10 cigarettes a day can actually cause between 8,000 and 26,000 new cases of asthma among their children.

A recent study found that infants are three times more likely to die from Sudden Infant Death Syndrome (SIDS) if their mothers smoke during and after pregnancy. Infants are twice as likely to die from SIDS if their mothers stop during pregnancy and then resume following birth.

Workplace

Workers exposed to secondhand smoke on the job are 34 percent more likely to get lung cancer.

The simple separation of smokers from nonsmokers within the same airspace may reduce, but cannot eliminate, the exposure of nonsmokers to secondhand smoke.

There is no safe level of exposure to a cancer-causing substance.

Survey responses indicate that at least 4.5 million American workers experience great discomfort from exposure to secondhand smoke.

The best method for controlling worker exposure to secondhand smoke is to eliminate tobacco use from the workplace and implement a smoking cessation program to support smokers who decide to quit.

About 85 percent of businesses had adopted some form of smoking policies in 1991, up from 36 percent in 1986.

My name is Amy Laughlin and I am currently a graduate student at KU. This year, as well as for the past eight years, I have partially paid for my education by waiting tables part-time. Unfortunately I am currently planning to quit my job as soon as I am able to find other employment, for only one reason - second-hand smoke. Working in an environment filled with smoke has always bothered me; it irritates my allergies, clogs my sinuses, causes my eyes to burn and I often leave work with a headache. Since I began working in smoke-filled restaurants, I have had frequent sinus infections and am no longer able to wear my contacts to work.

Now I have an even more important reason to quit my "passive smoking" - I am expecting my first child. The effects of tobacco smoke on unborn children are horrific: increasing the risk of SIDS, low birth rates, and future bronchial problems to name a few. During my last visit to my doctor, she strongly suggested I remove myself from such a harmful environment. This advice combined with the recent EPA designation of tobacco smoke as a Group A carcinogen had led me to my present decision to quit my job. Although my income is only a small percentage of my family's income, it is a necessary part which makes it difficult to assure financial and physical safety for myself and my baby. If tobacco smoke were banned in public places such as restaurants, I and others in my situation would not be forced to make such a tough decision.

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Kansans for NonSmokers Rights

P.O. Box 204 Topeka, Kansas 66601-0204

Statement by Dave Pomeroy on House Bill #2136 (February 10, 1993)

Good afternoon. I'm Dave Pomeroy, representing Kansans for Non-Smokers Rights--a volunteer organization funded by member contributions.

We are not "anti-smoker"--we leave that to the tobacco industry whose products kill 1,000 Americans each day. We do not advocate the prohibition of tobacco products, but do not feel non-users should be forced to suffer financially and physically from its use. The choice to smoke should remain with the individual just as the non-smoker should be given the choice of not smoking in public places. Unfortunately, when smoking occurs in most public places non-smokers are forced to smoke passively.

I will not dwell on the adverse effects of Environmental Tobacco Smoke (ETS)as that is well documented and accepted by all but the tobacco industry, but will comment on the rights of non-smokers to be free of this EPA declaired Group A carcinogen.

Smoking is just one of many activities which cannot be done safely in public places. I ride a bicycle, but I can't ride it in a shopping mall. I drive a car, but cannot do so anywhere I want, because, like cigarette smoke, it is a hazard to other people.

The tobacco industry advocates "accomodation" of smokers and non-smokers in public places. Unfortunately, tobacco smoke does not stay away from non-smokers and only smokers are accomodated under their proposals.

Is it discrimination to prohibit automobiles from sidewalks? bicycles from shopping malls or tobacco smoke from public places? I was asked not to chew gum recently in the Kansas State Historical Society Museum. Was that a violation of my rights as a gum chewer? I don't think so. I can still chew gum. I just need to do it in an appropriate place where it will not adversely affect people or property.

House Bill No. 2136, which should include workplaces where employees are often trapped in ETS for 8 hours each working day, will protect the public without taking anyone's rights away.

PHHW
2/10/93
Attm #17

Smoker's Rights
7520 West 63rd Street • Suite #11
Overland Park, KS 66202
(913) 384-0606 1-800-TXX-VOTE

February 10, 1993

Chair, Floor

~~Sue Hill~~
State Capitol
Topeka, Kansas

Via Telefax Transmission: 913/296-0042

Dear Sue:

Thank you for the opportunity to address our concerns with Bill No. 2136, 21-4010-40111-4013.

My name is Jim Seels, and I reside in Overland Park, Kansas. I am President of Smoker's Rights. I am requesting our elected officials to carefully study all of the factors relating to smoking in public buildings in our state.

For a number of years, Smokers have been abused and treated with no respect whatsoever. I am happy to defend our rights as taxpayers of this great State and to relay to you that Smokers are human beings that should have the same rights as non-smokers. We pay a very unfair share of taxes in this State while fighting constantly to be treated as decent, law-abiding human beings.

Smokers have always paid more than their fair share for our public buildings. To enact the proposed changes in our present laws is ludicrous, repressive, unfair, regressive, and demeaning. It is no more than a trickle down of E.P.A.'s decision to make smoking a continuing political football and media circus, with tax-paying Smokers as the victims. Have you ever pondered why the E.P.A. has different rules and standards when it comes to smoking issues?

I know and trust all of you to make the right decision(s) concerning these proposed unfair changes. These changes would affect approximately 30% of Kansas voters' rights in the most unfair way possible -- personal choice and basic public freedom.

Attm#18

Smoker's Rights
7520 West 63rd Street • Suite #11
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We would like to see our elected officials concentrating on such things as the inflated budget problems, tax problems, the present school tax mess, etc., instead of the issues addressed in the proposed unfair bills.

Thank you again for the opportunity to address our concerns with you.

Respectfully,

Jim Seels

PHHW
2-10-93
HB #18
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KANSAS MEDICAL SOCIETY
623 SW 10th Ave. • Topeka, Kansas 66612 • (913) 235-2383
WATS 800-332-0156 FAX 913-235-5114

February 9, 1993

TO: House Committee on Public Health and Welfare

FROM: Jerry Slaughter
Executive Director

SUBJECT: HB 2136; Concerning a Prohibition on Smoking in Public Places

The Kansas Medical Society appreciates the opportunity to appear in support of HB 2136, which would prohibit smoking in all public places. If enacted, HB 2136 would appear to take care of the issue contained in HB 2223, that of prohibiting smoking in the State Capitol and other state-owned buildings.

By now the deleterious health effects of second-hand smoke are well documented. As a matter of public policy, it is clearly wrong to subject non-smokers to the harmful effects of second-hand smoke in order to accommodate an ever shrinking minority of Kansans who do smoke (fewer than 30% of the population). A key to this bill is found in the definition of "public place" and "public meeting." These terms are defined at K.S.A. 21-4009. "Public place" means "enclosed indoor areas open to the public or used by the general public including but not limited to: restaurants, retail stores, public means mass transportation, passenger elevators, health care institutions, or any other place where health care services are provided to the public, educational facilities, libraries, courtrooms, state, county or municipal buildings, restrooms, grocery stores, school buses, museums, theaters, auditoriums, arenas and recreational facilities." "Public meeting" is defined to include "all meetings open to the public."

We believe HB 2136, if enacted, would make a significant statement about the serious health effects of second-hand smoking. The Legislature would be saying that, at least in enclosed public spaces, the health of non-smokers cannot be jeopardized by those who choose to smoke. We encourage you to report HB 2136 favorable for passage. Thank you for the opportunity to offer these comments.

JS/cb

PHaW
2-10-93
Attm #19

NATIONAL ENERGY MANAGEMENT INSTITUTE

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James T. Golden, Administrator

STATEMENT OF

JOHN MCALLISTER
REGIONAL DIRECTOR
NATIONAL ENERGY MANAGEMENT INSTITUTE

Before the
Legislature of the State of Kansas

Concerning
Smoking Restrictions in Public Places

February 10, 1993

I would like to thank the Kansas legislature for allowing me to submit comments on an issue that is gaining more and more public discussion. Not only will I address smoking restrictions in public places, but I will also address the broader issue of indoor air quality.

I am with the National Energy Management Institute (NEMI), a non-profit arm of the Sheet Metal Workers Union and the Sheet Metal and air Conditioning industry. NEMI works extensively on indoor air quality issues and is often called upon by the public and private sectors for professional technical assistance to determine the source of indoor air quality problems in various facilities. NEMI believes most indoor air quality problems can be adequately treated with increased amounts of ventilation, creative and appropriate use of air flow, adequate filtration and proper design and maintenance of heating, ventilation and air conditioning systems.

PH&W
2-10-93
Attm #20

NEMI's approach is consistent with the recommendations of the American Society of Heating, Refrigerating and Air Conditioning Engineers' (ASHRAE). ASHRAE has developed a recommended ventilation standard (62-1989) intended to address such indoor air quality problems in nearly all indoor environments. For example, ASHRAE Standard 62-1989 prescribes 30 cubic feet of outdoor air per minute (CFM) for a hotel guestroom, 20 CFM for office space and 15 CFM for a reception area.

Too often, proposed solutions to indoor air quality problems focus on one possible source, such as the amendments proposed here today to restrict smoking in public places, and do not provide comprehensive relief from indoor air quality problems. By restricting smoking, the Kansas legislature will address only one minor visible source, allowing more than 70 additional non-visible sources of poor indoor air quality to exist.

Studies conducted by the National Institute for Occupational Safety and Health (NIOSH) found that in only two to four percent of office buildings inspected following occupant complaints about indoor air quality could the complaints about indoor air quality be traced to tobacco smoke. If the State of Kansas adopts these amendments solely on restricting smoking, an overwhelming majority of indoor air quality problems would be left unsolved and/or untreated.

Each public office/facility is different, and only legislation that addresses all factors can adequately protect workers and occupants. Any indoor air quality action taken by this body should consider all possible sources of indoor air quality problems. Comprehensive engineering approaches -- rather than source control or a contaminant-by-contaminant approach -- will provide the greatest benefits to the greatest number of people.

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