

Air Quality Studies Show Immediate Impact of Smoke-free Workplace Policies

Secondhand smoke is a known human carcinogenⁱ, and is responsible for an estimated 50,000 deaths and other illnesses each yearⁱⁱ. Secondhand smoke exposure remains a major public health concern, even though it is entirely preventable^{iii,iv}. Policies requiring smoke-free environments are the most effective method for reducing secondhand smoke exposure in public places^v. Currently, 23 states have enacted strong smoke-free workplace laws, which represent approximately 48% of the U.S. population^{vi}. Researchers have investigated the immediate effects of smoke-free air on public health and occupational safety. Studies measuring indoor air quality show clear and instant reductions in harmful particulates in the air after the introduction of smoke-free air.

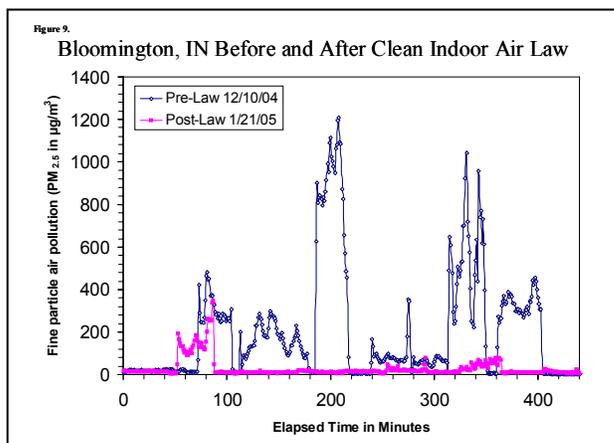
Studies have evaluated air quality by measuring the change in levels of respirable suspended particles (RSP) between smoke-free venues and those that permit smoking. PM_{2.5} is the concentration of particulate matter in the air smaller than 2.5 microns in diameter. Particles of this size are released in significant amounts from burning cigarettes and are easily inhaled deep into the lungs.

The U.S. Environmental Protection Agency (EPA) established particulate air pollution standards in 1997^{vii}. Annual exposure of PM 2.5 should not exceed levels that are > 15 ug/m³ or 24-hour exposure levels > 35 ug/m³. Studies have been conducted all over the world, including Indiana.

Air quality studies have shown an immediate reduction in harmful indoor air pollution after implementing a 100% smoke free air law.

Indiana Studies (December 2004-January 2005):

- Across three Indiana cities the level of indoor air pollution as measured by average PM_{2.5} level was 94% lower in the venues that were required to be smoke-free compared to those where smoking was permitted.
- Where smoking was not restricted by law, full-time bar and restaurant employees were exposed on the job to more than seven times the annual limit of fine particulate air pollution recommended by the EPA.

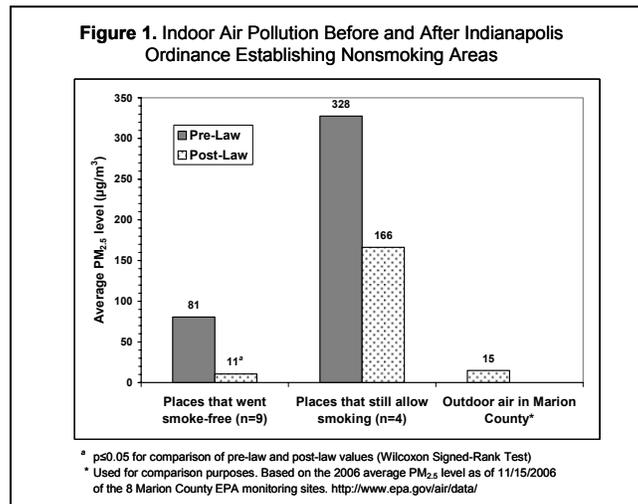


The level of indoor air pollution decreased by 89% in venues sampled in Bloomington after indoor smoking was prohibited by local ordinance in Bloomington.

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Indianapolis (January-May 2006):

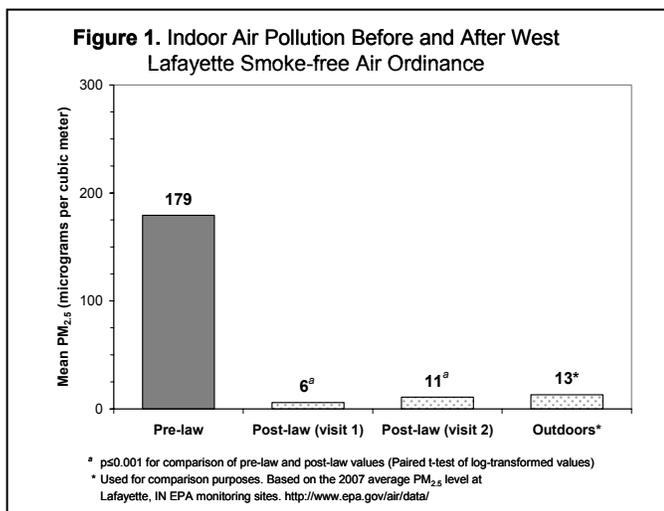
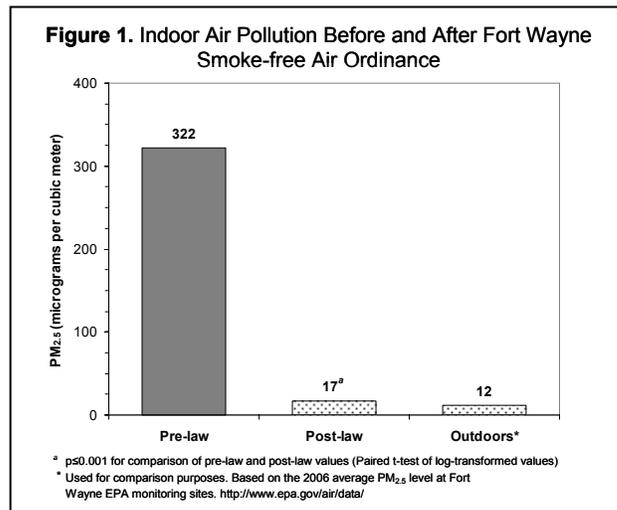
- A similar 85% reduction in PM_{2.5} levels was seen in Indianapolis locations that went smoke-free; however levels were unchanged in the locations that were exempt from the Indianapolis ordinance.
- Places that are exempt from the Indianapolis ordinance that continued to allow smoking experience not change in indoor air pollution and still have unhealthy air according to the EPA standards.



Fort Wayne (May-July 2007):

- The average level of fine particle indoor air pollution declined 94% after the Fort Wayne ordinance went into effect in.
- Compliance with the law was 100% in the fourteen places visited.
- Before the law, a full-time employee's average annual PM_{2.5} exposure was 83 µg/m³, or more than 5 times the annual limit, due to their occupational exposure.
- After the smoke-free air law, these same workers are now exposed to an average annual exposure is 13 µg/m³, a safe level according to the EPA.

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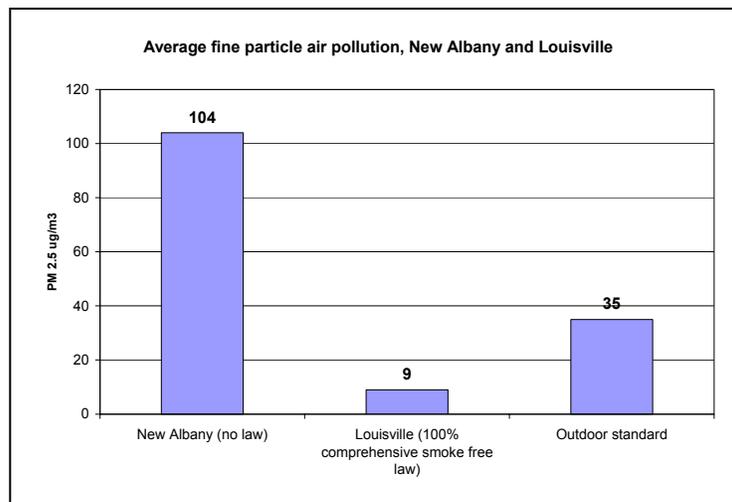
West Lafayette (April-September 2007):

- The average level of fine particle indoor air pollution declined 94% after the West Lafayette ordinance went into effect in those venues that went smoke-free as a result of the law.
- Before the law, employees in sampled locations were exposed to unhealthy air according to EPA standards. They now work in environments with safe levels of fine particle air pollution.

New Albany (January 2008):

- The average level of fine particle indoor air pollution in New Albany was 11.6 times higher in places with indoor smoking compared to similar venues in smoke-free Louisville. (Mean PM_{2.5} concentration in New Albany was 104 µg/m³ versus 9 µg/m³ in smoke-free Louisville)
- The New Albany venues had average PM_{2.5} levels ranging from 5 to 348 µg/m³.
- The level of indoor air pollution in New Albany hospitality venues were three times higher than U.S. Environmental Protection Agency (EPA) standards. Employees in these workplaces are exposed to unhealthy air.

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Other communities in the U.S.:

In Delaware, before and after a statewide prohibition of smoking in hospitality venues, including one casino, found that about 90% of the fine particle pollution could be attributed to tobacco smoke^{viii}.

Similarly, in a study of 22 hospitality venues in Western New York, found a 90% reduction in RSP levels in bars and restaurants, an 84% reduction in large recreation venues such as bingo halls and bowling alleys, and a 58% reduction even in locations where only secondhand smoke from an adjacent room was observed at baseline^{ix}.

A cross-sectional study of 53 hospitality venues in 7 major cities across the U.S. showed 82% less indoor air pollution in the locations subject to smoke-free air laws, even though compliance with the laws was less than 100%^x.

As a result of these smoke free air laws, air quality is dramatically improved for workers and patrons of these hospitality venues. This reduction in exposure to toxic secondhand smoke will result in improved quality of life and health outcomes for workers and residents.

Indiana indoor air quality studies can be found [here](#).

- ii. National Toxicology Program. 9th Report on Carcinogens 2000. Research Triangle Park, NC: U.S. Department of Health and Human Services, National Institute of Environmental Health Sciences; 2000.
- iii. CDC. Annual smoking-attributable mortality, years of potential life lost, and economic costs – United States, 1995-1999; MMWR 2002;51(14):300-320.
- iv. U.S. Department of Health and Human Services. Reducing tobacco use: a report of the Surgeon General. Washington, D.C.: US Government Printing Office, 2000.
- v. Hopkins DP, Briss PA, Ricard CJ, Husten CG, Carande-Kulis VG, Fielding JE, et al. Reviews of evidence regarding interventions to reduce tobacco use and exposure to environmental tobacco smoke. Am J Prev Med 2001;20(2 Suppl):16-66.
- vi. Montana becomes the 8th state on October 1.
- vii. U.S. Environmental Protection Agency, National ambient air quality standards for particulate matter; final rule. Federal Register, 1997. 62(138): p. 38651-38701.
- viii. Repace, J., Respirable particles and carcinogens in the air of Delaware hospitality venues before and after a smoking ban. J Occup Environ Med, 2004. 46(9): p. 887-905.
- ix. Travers, M.J., et al., Indoor Air Quality in Hospitality Venues Before and After the Implementation of a Clean Indoor Air Law-Western New York, 2003. Morbidity and Mortality Weekly Report (MMWR), 2004. 53(44): p. 1038-1041.
- x. Travers, M.J., A. Hyland, and J.L. Repace, 7-City Air Monitoring Study (7-CAMS), March-April 2004. 2004, Roswell Park Cancer Institute: Buffalo.

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