Study raises concerns about outdoor second-hand smoke

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Indoor smoking bans have forced smokers at bars and restaurants onto outdoor patios, but a new University of Georgia study in collaboration with the Centers for Disease Control and Prevention suggests that these outdoor smoking areas might be creating a new health hazard.

The study, thought to be the first to assess levels of a nicotine byproduct known as cotinine in nonsmokers exposed to second-hand smoke outdoors, found levels up to 162 percent greater than in the control group. The results appear in the November issue of the *Journal of Occupational and Environmental Hygiene*.

"Indoor smoking bans have helped to create more of these outdoor environments where people are exposed to secondhand smoke," said study co-author Luke Naeher, associate professor in the UGA College of Public Health. "We know from our previous study that there are measurable airborne levels of secondhand smoke in these environments, and we know from this study that we can measure internal exposure.

"Secondhand smoke contains several known carcinogens and the current thinking is that there is no safe level of exposure," he added. "So the levels that we are seeing are a potential public health issue."

Athens-Clarke County, Ga., enacted an indoor smoking ban in 2005, providing Naeher and his colleagues and ideal environment for their study. The team recruited 20 non-smoking adults and placed them in one of three environments: outside bars, outside restaurants and, for the

control group, outside the UGA main library. Immediately before and after the six-hour study period, the volunteers gave a saliva sample that was tested for levels of cotinine, a byproduct of nicotine and a commonly used marker of tobacco exposure.

The team found an average increase in cotinine of 162 percent for the volunteers stationed at outdoor seating and standing areas at bars, a 102 percent increase for those outside of restaurants and a 16 percent increase for the control group near the library.

Naeher acknowledges that an exposure of six-hours is greater than what an average patron would experience but said that employees can be exposed for even longer periods.

"Anyone who works in that environment—waitresses, waiters or bouncers—may be there for up to six hours or longer," Naeher said. "Across the country, a large number of people are occupationally exposed to second-hand smoke in this way."

Studies that measured health outcomes following indoor smoking bans have credited the bans with lowering rates of heart attacks and respiratory illness, but Naeher said that the health impacts of outdoor second-hand smoke are still unknown.

In Naeher's study, cotinine levels in the volunteers at the bar setting saw their levels increase from an average pre-exposure level of 0.069 ng/ml (nanograms per milliliter) to an average post-exposure level of 0.182 ng/ml. The maximum value observed, however, was 0.959 ng/ml. To put that number into context, a widely cited study has determined that an average cotinine level of 0.4 ng/ml increases lung cancer deaths by 1 for every 1,000 people and increases heart disease deaths by 1 for every 100 people.

Still, the researchers caution that it's too early to draw policy conclusions from their findings. Cotinine is a marker of exposure to tobacco, Naeher said, but is not a carcinogen. The team is currently planning a study that would measure levels of a molecule known as NNAL, which is a marker of tobacco exposure and a known carcinogen, in people exposed to second-hand smoke outdoors.

"Our study suggests that there is reason to be concerned about second-hand smoke levels outdoors," said study co-author Gideon St. Helen, who is pursuing his Ph.D. through the university's Interdisciplinary Toxicology Program, "and our findings are an incentive for us to do further studies to see what the effects of those levels are."

Source: University of Georgia (news : web)