

HB 900 - Occupational Safety and Health - Public Buildings
Indoor Air Quality
Environment and Transportation Committee
Favorable with Amendments

I am the economist at the Johns Hopkins Center for Health Security. I specialize in cost-benefit analysis of public health policy and was a co-author of our report on indoor air quality to protect school students from COVID. I am currently on an ASHRAE Project Committee to develop standards to reduce airborne disease transmission. The Center for Health Security is currently developing a model state law for indoor air quality, and I am part of the committee developing that model law. I have reviewed House Bill 900, and I provide these comments for your consideration.

If we had a choice between passing HB900, and never doing anything to improve indoor air quality, I would support HB900. The fiscal note estimates annual costs of about \$400 million, and there are about 100,000 Maryland state employees, so according to that estimate, the bill would cost about \$4,000 per year per state worker. I believe that the benefits of improved indoor air quality would exceed \$4,000 per year per affected worker.

In their 2017 review article (<https://core.ac.uk/download/pdf/84003595.pdf>) Wargocki and Wyon demonstrate that typical current indoor air quality reduces job performance by 5-10%. Improving ventilation rates, and using appropriate filters to trap pollutants, can improve productivity by 5- 10%. Every year, Maryland spends about \$11 billion on salaries for state workers, or about \$110,000 per worker. This means that increasing worker productivity by 5% would give the state benefits worth \$5,500 per worker per year.

In addition to those direct productivity benefits, there would be many more benefits of indoor air quality. There would be a 10% reduction in employee sick leave. School children and college students would get sick less and learn more. In the long run, employees would have fewer chronic conditions, and spend less on health care. Using standard US government methodology for valuing health-related quality of life, the value of these health improvements would also be higher than \$4,000 per employee per year, in addition to the productivity benefits.

However, it is possible to achieve the benefits of HB900 by spending much less than \$4,000 per employee every year. HB900 calls for annual inspections of all buildings, no matter what their measured air quality is, and has specific instructions on how these inspections should be done. Many of these requirements add substantial costs, while providing minimal benefits for indoor air quality. In particular, the requirement for an annual assessment of all building envelopes and enclosures is likely to drive much of the estimated cost, while providing minimal benefit. Even if no other changes are made, it should be removed from the bill.

Inspections and certifications are expensive, requiring many hours of skilled labor. By contrast, real-time sensors are cheap, and getting cheaper every year. A good sensor for measuring and

recording PM2.5, the most dangerous kind of pollution, can be purchased and installed for a few hundred dollars. To take advantage of this new technology, the bill should be rewritten to focus on constant measuring of indoor air quality and reacting to high levels of pollutants if necessary. **Instead of mandating inspections of all buildings, HB900 should mandate that sensors be placed near where employees work, to monitor their air quality.** This would cost at most \$400 per employee if building managers installed a sensor for each employee. In many places, fewer sensors would be needed.

With sensors installed, employees and building managers could then see, in real time, the quality of their air. If necessary, they could then take actions to fix it. In the buildings where air quality is good, we would not waste any money in additional inspections.

To provide the right incentive to fix problems with indoor air quality, **the bill should direct Maryland Occupational Safety and Health to set limits for exposure to indoor air pollutants, and to set a schedule of hazard pay** to be given to workers when their air is too polluted. A system of real-time sensors monitoring pollution and giving employees meaningful extra pay in compensation when they are exposed to too much pollution, is both necessary and sufficient to protect workers. With sensors and hazard pay, no other expensive mandates are necessary to fix the problem. Where the air is bad, building managers will see the problem, and then take cost-effective measures to fix it.

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