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Asthma inhalers tied to large greenhouse gas emissions production

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Inhaler devices are a substantial source of greenhouse gas emissions in the United States, according to a research letter published online Aug. 29 in the *Journal of the American Medical Association*.

Jyothi Tirumalasetty, M.D., from the Stanford University School of Medicine in California, and colleagues assessed mean emissions in 2022 for U.S. brand-name inhalers (metered-dose, dry powder, and soft-mist classes) prescribed to Medicare Part D and Medicaid beneficiaries using inhaler claims and cost data extracted from the Centers for Medicare & Medicaid Services (CMS) summary and statistics database.

The researchers found that mean estimated emissions per inhaler by device class were 23.1 kg of carbon dioxide equivalent (CO_2e) for metered-dose inhalers (14 inhalers), 0.79 kg CO_2e for dry-powder inhalers (19 inhalers), and 0.78 kg CO_2e for soft-mist inhalers (4 inhalers), with 10 kg CO_2e equivalent to 41.2 km driven in an average gasoline-powered passenger vehicle.

The highest emissions per inhaler were seen for the inhaled corticosteroid, long-acting β-agonist, metered-dose inhaler Dulera (mometasone/formoterol; 48.1 kg CO_2e) versus an analogous inhaled corticosteroid, long-acting β-agonist, dry-powder inhaler Advair Diskus (fluticasone/salmeterol; 0.898 kg CO_2e emissions per inhaler). For short-acting β-agonist medications, Ventolin HFA (albuterol sulfate) had the highest emissions (28.7 kg CO_2e per inhaler).

Overall, there were 69.8 million CMS inhaler claims in 2022, resulting in an estimated 1.15 million metric tons of CO_2e emissions, or the equivalent of 226,960 homes' yearly electricity use.

"Formulary choices that optimize clinical efficacy, greenhouse gas emissions, and affordability may improve patient outcomes and reduce climate pollution," the authors write.

More information: Jyothi Tirumalasetty et al, Greenhouse Gas Emissions and Costs of Inhaler Devices in the US, *JAMA* (2024). DOI: 10.1001/jama.2024.15331

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