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Title:	Underreporting and open burning – the two largest challenges for sustainable waste management in India
Authors:	Chaudhary, Pooja (/jspui/browse?type=author&value=Chaudhary%2C+Pooja) Garg, Saryu (/jspui/browse?type=author&value=Garg%2C+Saryu) George, Tess (/jspui/browse?type=author&value=George%2C+Tess) Shabin, Muhammed (/jspui/browse?type=author&value=Shabin%2C+Muhammed) Saha, Sneha (/jspui/browse?type=author&value=Saha%2C+Sneha) Subodh, Subodh (/jspui/browse?type=author&value=Subodh%2C+Subodh) Sinha, Baerbel (/jspui/browse?type=author&value=Sinha%2C+Baerbel)
Keywords:	Municipal solid waste generation Waste composition Air pollution Open burning Emission inventory
Issue Date:	2021
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Abstract:	The total waste generation in India reported for 2015 is highly uncertain (51–300 Tgy ⁻¹), primarily because observational data from rural regions within India is lacking. This makes it difficult to constrain rural waste generation rates. Official government data (51 Tg) denies the existence of rural waste generation in India. The rural data gap makes it difficult to construct accurate open waste burning emission inventories and plan waste management infrastructure. Our study presents activity data from understudied rural regions across India and establishes a relationship between waste generation and household income for both urban and rural India. We use this relationship to create a 0.1° x 0.1° gridded waste generation and waste treatment dataset and construct an open waste burning emission inventory for India (OWBEII) for the year 2020, after segregating both the rural and urban population into 5 income group with the help of socioeconomic data from the national health surveys. We find that out of 192 (102–231) Tgy ⁻¹ waste generated in 2020, 74 (30–92) Tgy ⁻¹ was burned in the open. Open waste burning is a widely established practice of waste disposal in developing nations and emits particulate matter (285–1401 Ggy ⁻¹ PM _{2.5} and 322–1486 Ggy ⁻¹ PM ₁₀), a suite of carcinogens (19–82 Ggy ⁻¹ benzene) and very reactive VOCs, which act as precursors to tropospheric ozone and secondary aerosol formation. The anthropogenic emissions of formaldehyde (a Group 1 carcinogen) from this source are 5.7 times larger than India's currently recognized total anthropogenic budget of formaldehyde in the EDGARv4.3.2 emission inventory.
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