MAKING SENSE #7

When do science recommendations stop being effective?

The case of the sprawl of diesel electricity generators in Beirut

By Mohammad Al Hallak, Abdul Aziz Kurdieh, Amira Yassine, Rachel El Hage, Najat Saliba

Abstract

Lebanon, plagued by political and economic crises, experienced a government collapse in early 2020, leading to an electrical nationwide blackout by 2023. Diesel generators were used to compensate for the absence of power production from the national provider, Electricite du Liban (EDL). To investigate the effect of the crisis on the levels of 16 EPA particle bound polycyclic aromatic hydrocarbons (PPAHs), an annual comparative analysis of three locations within Beirut started in 2022 and ended in 2023. The locations are: American University of Beirut (AUB), Beirut Central District (BCD) and Nursing School Makassed University (NSMU). Sampling took place and the PPAHs samples were extracted, quantified using Gas Chromatography-Mass spectrometry (GC-MS) and source apportioned using Positive Matrix Factorization (PMF). Particulate Matter 2.5μm (PM2.5) mean levels at AUB, BCD and NSMU, which was found to be 14.3 μg/m3, 18.3 μg/m3 and 22.6 μg/m3 respectively, beside the high annual PM2.5 mean level (17.19 μg/m3) exceeded the World Health Organization (WHO) standard levels. The factors identified in the three sites are diesel, incineration, and gasoline emissions. The dominant factor in three sites was the diesel emissions, specifically from generators, with 56% in BCD, 42% in AUB and 43% in NSMU. The contribution of diesel emission in AUB has increased by 100% since the last study in 2016–2017. Similarly, the excess cancer risk (ESR) in the three sites was above the EPA threshold with an increase of 53% compared to the one calculated previously in AUB. This situation, where law of enforcement is absent, need for international action to curb emissions and for funding agencies to adopt sustainable, "carbon-free" funding strategies to support urban development in low- and middle-income countries (LMICs). Yet, EDL's failure to fulfill Lebanon's populace electricity requirements infringes upon their electricity entitlements.

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