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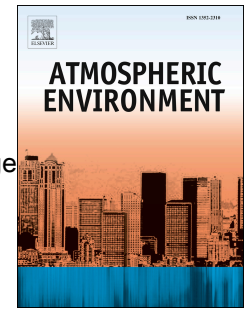

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PII: S1352-2310(16)30208-4

DOI: 10.1016/j.atmosenv.2016.03.044

Reference: AEA 14526

To appear in: *Atmospheric Environment*

Received Date: 22 October 2015

Revised Date: 15 March 2016

Accepted Date: 17 March 2016

Please cite this article as: van Zelm, R., Preiss, P., van Goethem, T., Van Dingenen, R., Huijbregts, M., Regionalized life cycle impact assessment of air pollution on the global scale: damage to human health and vegetation, *Atmospheric Environment* (2016), doi: 10.1016/j.atmosenv.2016.03.044.

Regionalized life cycle impact assessment of air pollution on the global scale: damage to human health and vegetation

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Abstract

We developed regionalized characterization factors (CFs) for human health damage from particulate matter (PM2.5) and ozone, and for damage to vegetation from ozone, at the global scale. These factors can be used in the impact assessment phase of an environmental life cycle assessment. CFs express the overall damage of a certain pollutant per unit of emission of a precursor, i.e. primary PM2.5, nitrogen oxides (NO_x), ammonia (NH_3), sulfur dioxide (SO_2) and non-methane volatile organic compounds (NMVOCs). The global chemical transport model TM5 was used to calculate intake fractions of PM2.5 and ozone for 56 world regions covering the whole globe. Furthermore, region-specific effect and damage factors were derived, using mortality rates, background concentrations and years of life lost. The