

## 2.075 Assessment of Emission from Crop Residue Open Burning in Southeast Asia.

Presenting Author:

**Nguyen Thi Kim Oanh**, Environmental Engineering and Management, School of Environment, Resources and Development, Asian Institute of Technology, [kimoanh@ait.ac.th](mailto:kimoanh@ait.ac.th)

Co-Authors:

**Didin Agustian Permadi**, Environmental Engineering and Management, School of Environment, Resources and Development, Asian Institute of Technology

Abstract:

Disposal of agricultural crop residue by open burning (CROB) is increasingly practiced in Southeast Asia (SEA) countries to get rid of huge amounts of this waste annually. The activity generates large amounts of air pollutants which cause deterioration of local air quality and potentially affect the regional climate. This paper reports the emission inventory (EI) results of CROB in 11 SEA countries in 2014. The EI covers major crops in SEA including rice, maize, soybean, potato/sweet potato, groundnut, sugarcane and cassava. The inventory species included trace gases, particulate matter, as well as semi-volatile organic compounds of polycyclic aromatic hydrocarbons (PAHs), dioxins and furans (PCDDs/PCDFs), and greenhouse gases (GHGs). Activity data on field open burning in SEA was primarily collected from the local surveys. The emission factors used in the EI were those developed from the field measurements in the region whenever available. The total annual emissions from SEA in 2014, in Gg, were: 52 SO<sub>2</sub>; 379 NO<sub>x</sub>; 22,473 CO; 1,109 NMVOC; 618 NH<sub>3</sub>; 1,407 PM<sub>10</sub>; 1,288 PM<sub>2.5</sub>; 89 BC; 470 OC; 209,640 CO<sub>2</sub>; 640 CH<sub>4</sub> and 17 N<sub>2</sub>O. For toxic air pollutants, the emissions of total PAHs were estimated at 39 Gg while that of PCDD/PCDF was 83 g Toxicity Equivalent (TEQ). Emission of benzo(a)pyrene (BaP), known as a carcinogenic pollutant, was estimated at 2 Gg in 2014. Indonesia was the top emitter of most species (22-52% depending on species) followed by Vietnam (13-26%) and Thailand (13-19%). The gridded EI results (0.1 degree resolution) prepared in this study can be readily used for regional modeling efforts.