# Chemical composition of particles emitted from open burning of crop residues

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## Abstract

To understand the impact of open burning of crop residues to the atmospheric particles, we experimentally burned crop residues (rice straw, wheat straw, barley straw, and rice hull produced in Japan) in an outdoor chamber, and measured the particle mass and their composition (elemental carbon, organic carbon, elements, and ions) in the exhausts by particle size. Particulate emission factors differed among these residues a factor of seven. Particulate compositions were also different remarkably among residues or production areas. It was shown that higher moisture content in crop residue remarkably increases the particulate emission and also affects the particulate composition. The particulate emission factors reported in AP42, often used in the Japanese emission inventories, were in the range of our experimental values in various conditions for rice straw and wheat straw. However, the particulate emission factors reported in AP42 for barley straw were about twice our experimental values. Particulate emission factors and their chemical composition of rice hull were firstly shown.