

# Jet engine lubrication oil as major component of aircraft exhaust nanoparticles

**Akihiro Fushimi** <sup>1\*</sup>

Katsumi Saitoh <sup>1,2</sup>, Yuji Fujitani <sup>1</sup>, Nobuyuki Takegawa <sup>3</sup>

*1 National Institute for Environmental Studies  
(**NIES**), Japan.*

*2 Environmental Science Analysis and Research  
Laboratory, Japan*

*3 Tokyo Metropolitan University, Japan*

*\* Correspondence to: [fushimi.akihiro@nies.go.jp](mailto:fushimi.akihiro@nies.go.jp)*

*Narita International Airport, Japan*

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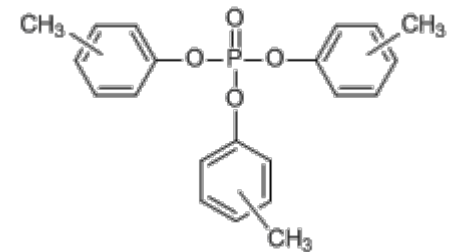
# Conclusions

From the ambient measurements near a runway,

- Modal diameters in the aircraft exhaust plumes were  $\approx 10$  nm or smaller
- Aircraft exhaust nanoparticles are OC-rich. Consistent with the volatility of nanoparticles
- Half the organic compounds in the nanoparticles ( $D < 30$  nm) can be attributed to unburned jet lubrication oil

## Implications

- Superior technologies for controlling oil emissions (e.g., through a breather vent) may greatly reduce aircraft nanoparticle emissions
- Reduction in the oil emissions would be beneficial in mitigating health risk since oils contain toxic materials (e.g., TCP)
- Environmental (health and climate) impacts near airports and in the upper troposphere



**TCP**

(Tricresyl Phosphate)

$C_{21}H_{21}O_4P$   
MW = 368.37

# Related publication

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## Identification of jet lubrication oil as a major component of aircraft exhaust nanoparticles

Akihiro Fushimi<sup>1</sup>, Katsumi Saitoh<sup>1,2</sup>, Yuji Fujitani<sup>3</sup>, and Nobuyuki Takegawa<sup>4</sup>

## Related presentation in this conference

*Saitoh et al.*  
**Poster 14**

Characteristics of chemical composition for ultrafine particle collected at Narita International Airport

