Regulating VOC emissions from loading of crude oil – flexible implementation

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Norway’s obligations under the 1991 VOC Protocol

By 1999:

• 30% reduction of 1989 emissions within TOMA*

• Total national emissions not to exceed the 1988 level

* mainland Norway and the exclusive economic zone south of 62°N latitude
Non-compliance - Why?

• Growing petroleum sector, transport of oil by ships
• Large emissions from loading of crude oil
• Underestimated base-year (1988 and 1989) emissions
• Underestimated emission projections
• Development of new emission abatement technology was delayed
Application of new policy measures needed

• A large number of licence holders (> 20) and oil field operators
• Failed to conclude on a voluntary agreement with the petroleum industry (1999)
• Emission permits regulating offshore emissions issued in 2000 (final 2001)
Abatement measure installed on ships

- VOC recovery units to capture and recover nmVOC have been installed on shuttle tankers
- Various technologies available; "active" and "passive"
- Recovering 80-100 % (active) or 50 % (passive) of nmVOC emissions
Emission permits – Flexible implementation

• Individual emission permits were issued to operators of 11 oil fields
• Identical emission limits set for all fields
• Compliance with emission standards is considered met for each field if the annual average emission from all loading operations are below the emission limits.
The VOC Industry Cooperation (VOCIC)

• Cooperation between > 20 companies holding licence to extract oil and the operators

• Formalized through the "VOC Agreement for outfitting NMVOC Plants on shuttle tankers serving Norwegian offshore loading oil fields"

• VOCIC coordinates negotiations of contracts with ship owners and the installation of VOC emission abatement technology and monitoring equipment on shuttle tankers

• VOCIC also coordinates monitoring, reporting etc.
Emission reductions

The 1991 VOC Protocol:
• Non compliance for 6 - 7 years
• New technical measures developed
• Emissions reduced by 60 % (Norway) and 80 % (offshore) from 2002 to 2015
• In compliance with the 1991 VOC Protocol obligations from 2005 (Norway) and 2006 (TOMA)

The Gothenburg Protocol:
• Reached compliance with the 2010 emission ceiling by 2008