

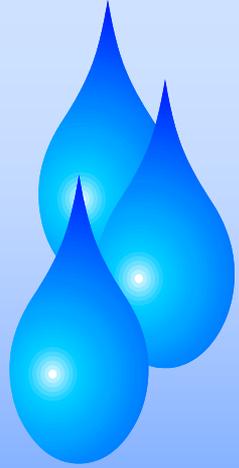
# Future fuels of aviation

Brussels May 30 2006



**Lars H. Hjelmberg**

**Executive director**



# **Aviation Gasoline**

**A speciality product.**

**estimated w/w production**

**~ 1.600.000 ton/year**

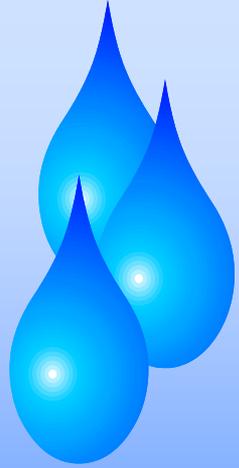
**In volume**

**< 0.5 % of automotive gasoline**

**or**

**< 1/4 of automotive gasoline system**

**evaporation**

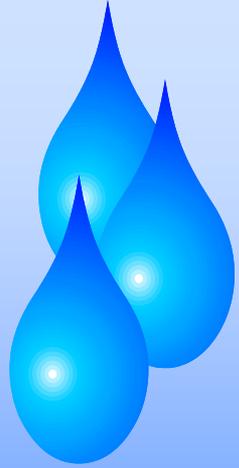


# Aviation Gasoline 100 octane

## low lead - AVGAS 100 LL

### Typical formula

- Alkylate ~ 70 %
  - Isopentane ~ 15 %
  - Toluene ~ 15 %
  - **Lead**
  - **Dyes**
  - **Scavenger**
  - **Antioxidant**
- } additives



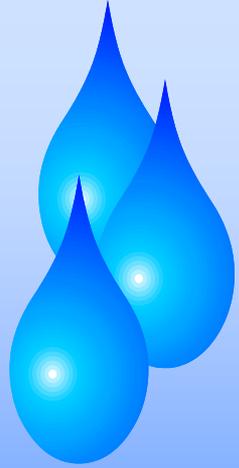
# **Avgas producers concern**

**Availability of traditional H/C components**

**Lead                    one production site**

**Scavenger            agent banned in 1987**

**Politicians            future of leaded fuels.**

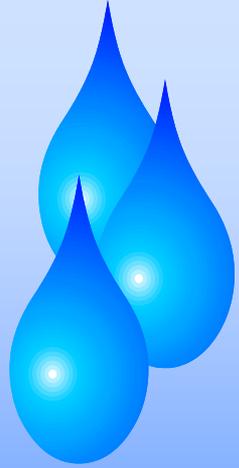


# **Avgas producers solution**

**Use bio-material  
example:**

**Replace**

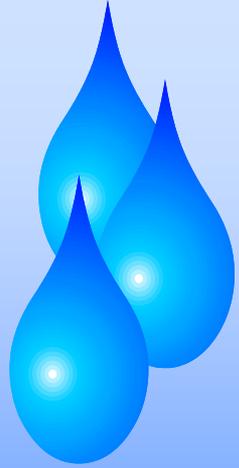
**toluene + partly alkylate with ETBE**



# **Avgas producers solution**

**Introduction of bio-material  
opens up for tax-incentives  
from politicians.**

**End-product is cleaner and less toxic**



# **Avgas producers concern**

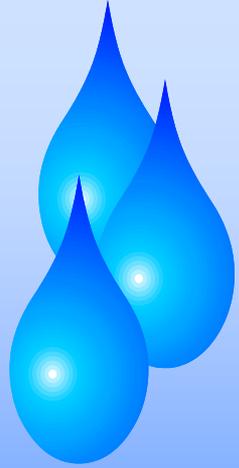
**BUT**

**will tax-incentives compensate for**

**research and development  
of new fuels**

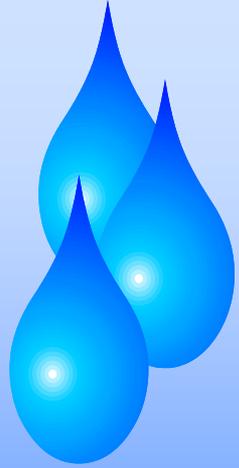
**&**

**overall higher production costs?**



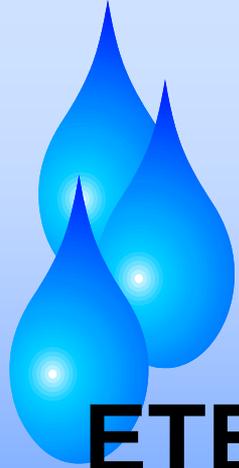
# **Avgas producers solution**

**lower price to end-customer  
due to tax incentives  
increases market  
&  
increased volume lowers  
costs of down-stream operations**



# **Avgas producers action**

**Ask the ASTM D02 section J  
to recognize ETBE  
as an approved component  
in AVGAS standard D 910  
at their June meeting 2006 in Toronto**



# Avgas producers solution

## ETBE cleared by the U.S. FAA in 1995



U.S. Department  
of Transportation

Federal Aviation  
Administration

## Memorandum

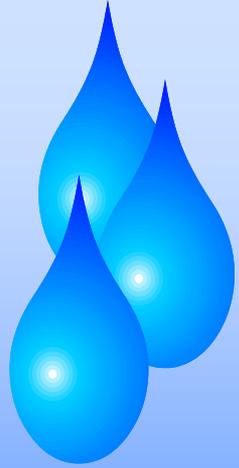
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Subject: INFORMATION: Approval of Ethyl-Tertiary-Butyl-Ether (ETBE) Oxygenate Additive for use in Autogas Supplemental Type Certificates (STCs)

From: Manager, Small Airplane Directorate, ACE-100  
Manager, Engine and Propeller Directorate, ANE-100

Date: DEC \_1 1995

Reply to  
Attn. of: Alpiser  
(816) 426-6934

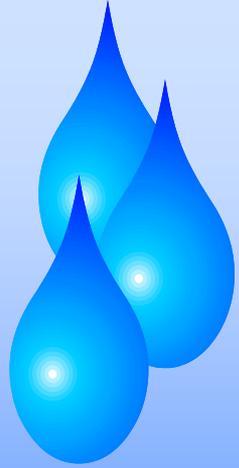


# **New Hjelmeo Avgas 91/96**

## **unleaded with ETBE**

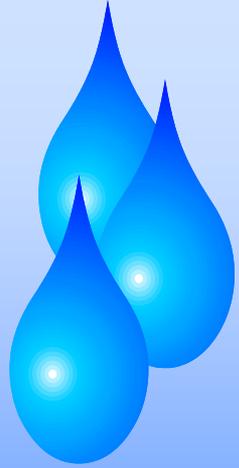
- **Superior environmental qualities compared to Automotive gasoline Eurosuper 95 RON or AVGAS 100 LL**
- **free from aromatics**
- **but more expensive to produce**

**Will be introduced if politicians will**



# **Homework for politicians**

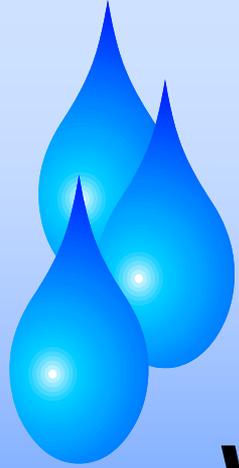
**Classify aviation  
fuel-products  
based on  
their  
environmental qualities**



# **Homework for politicians**

**With an environmental  
classification of aviation fuels**

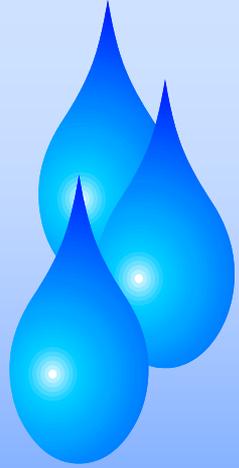
**allow tax-breaks  
for environmentally  
better products**



# **Homework for politicians**

**With classification and tax-break  
in hand**

**The EU commission must take  
responsibility and propose  
system that will create  
ONE European market.**



# **All of us**

**With classification, tax-break  
and ONE European market**

**best environmental  
sound products  
will be winners  
for the benefit of all**

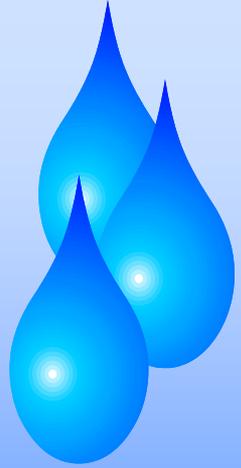


# **25 years of Unleaded Avgas in Sweden**

## **Avgas 91/96 UL**

## **today 2006**

- **Available at > 70 airports**
- **used by ~ 700 aircraft**
- **excellent technical history**
  
- **produced by Hjelmcö Oil in Sweden**

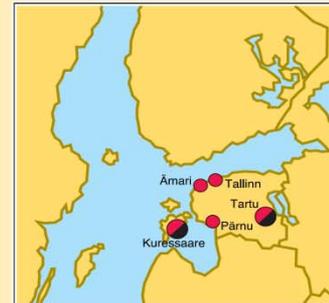
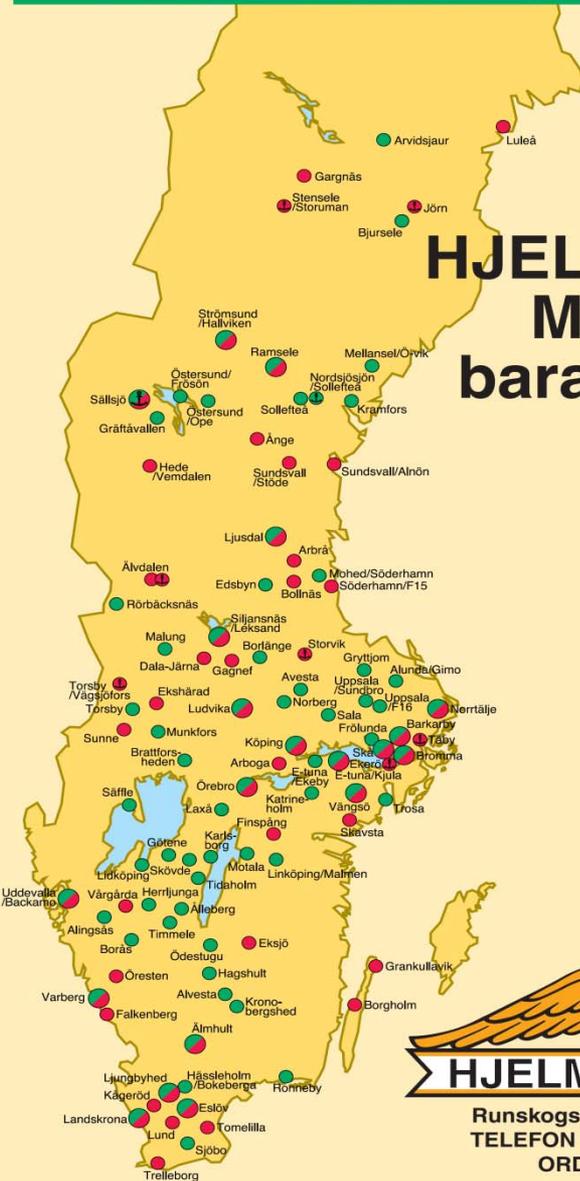


# AVGAS 100 LL

# HJELMCO 91/96 UL

## HJELMCO OIL AB

Mycket mer än  
bara flygbränsle!

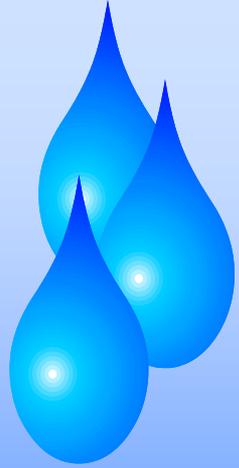


Verksamheten i Estland drivs självständigt  
från HELMCOIL A/S med huvudkontor i  
Tallinn, tel/fax 00372-6-21 29 51.

- AVGAS 100 LL
- HJELMCO 91/96 UL
- JET-A1
- ↓ sjöflyg



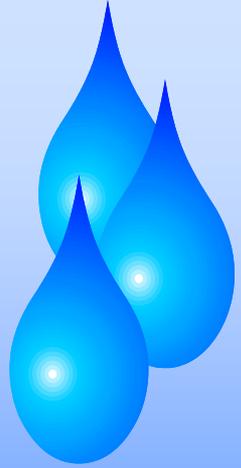
Runskogsvägen 4 B 192 48 SOLLENTUNA  
TELEFON 08-626 93 86 • FAX 08-626 94 16  
ORDERTELEFON 021- 12 31 76



**All of us**

**It is time to think**

**Why is there in 2006 no unleaded  
Aviation gasoline  
to purchase in any other EU-country  
than Sweden  
when such certified and approved products have  
been on the market in Sweden for 25 years?**



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