

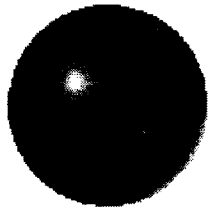
AR 226 - 1010

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EPA/FMG Meeting

Washington

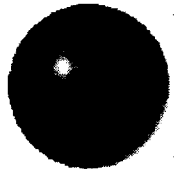
March 7, 2001

Room 526 East Tower

Company Sanitized

2001 APR 18 AM 11:14

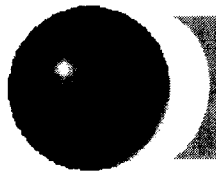
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EPA/FMG Meeting

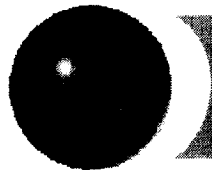
✚ Purpose

- ✚ Review the background
- ✚ Summarize and obtain feedback on the toxicology program
- ✚ Summarize the mass balance data
- ✚ Review industry commitment for upgrading containment
- ✚ Secure continued supply of fluoropolymer processing aides going forward



WHAT WE NEED/WHAT WE WILL DO WHAT ELSE DO YOU NEED?

- ⊕ EPA Leadership and Guidance for FPA Users and Manufacturers on Global Environmental Issues
 - ▣ Assurance from EPA that FPA can continue to be used
 - ▣ Assurance from EPA that FPA capacity can be replaced
- ⊕ Commitment to answer EPA's questions on fate and toxicity and to control releases
 - ▣ Responsibly deal with new information in timely fashion



EPA/FMG Meeting

⊕ Agenda

⊞ Opening remarks

- Recap previous meeting

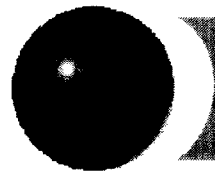
⊞ Toxicology Program Review

- Mammalian
- Pharmacokinetic
- Ecotox

⊞ Mass Balance Summary on FPAs

⊞ Discussion and feedback

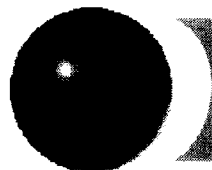
- Path forward



Fluoropolymer Manufacturers Group (FMG)

- ◆ **A Special Purpose Committee of the SPI**

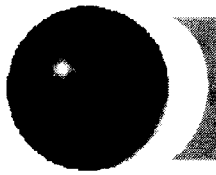
- ❑ Asahi Glass Fluoropolymers
- ❑ Atofina
- ❑ Ausimont
- ❑ Daikin
- ❑ DuPont & DuPont/Dow Elastomers
- ❑ Dyneon (a 3M Company)



Fluoropolymer Manufacturers Group (FMG)

- ✦ **The mission of the FMG is to promote the continued safe manufacture and use of fluoropolymers made using fluoropolymer polymerization aids (FPA) while establishing and supporting responsible use of fluoropolymer products and minimizing the impact on the environment**

FPA – commercially available perfluoroalkyl carboxylate surfactants



Recap Fluoropolymers & APFO Chemistry

⊕ APFO vs. PFOS Chemistry

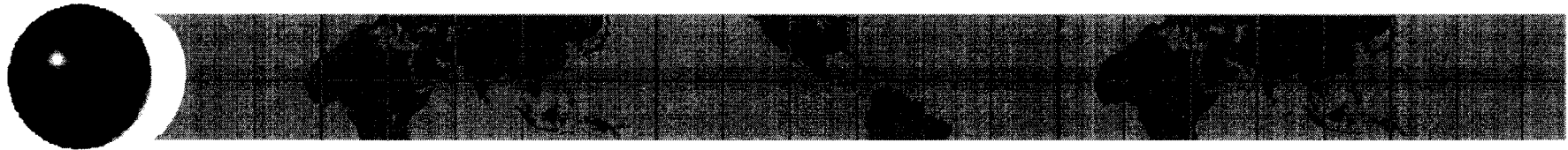
- ⊠ PFOS - part of the product being sold
- ⊠ APFO - processing aid, not intended to be in product

⊕ Production Volume Comparisons

- ⊠ PFOS – thousands of tonnes
- ⊠ APFO - *tens* of tonnes

⊕ Dispersive vs. Non-Dispersive Uses

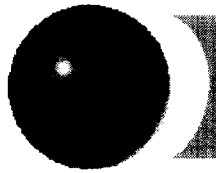
- ⊠ PFOS - Spray applications for end use products (dispersive by design)
- ⊠ APFO - Residual in end-use products (non-dispersive)



Recap September 14 Meeting

- Illustrate Necessity of the Continued Safe Use of FPA
 - Irreplaceable
 - Critical Applications
 - Impact on Society and the Industry
- Demonstrate the Industry's Safety & Health Awareness
 - Internal Controls to Minimize Exposure to the Employees
 - Forward Program and Plans

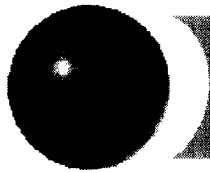
Introduce and
Handover to GK -
Toxicology
Program



EPA/FMG Meeting

⊕ Mass Balance

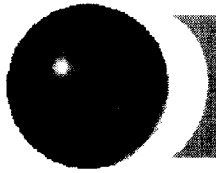
- ⊞ Questionnaire format
- ⊞ Outlined sources of supply and distribution
- ⊞ Delineated output
 - Products sold
 - Recovery and Recycle
 - Effluents – Air and Water



EPA/FMG Meeting

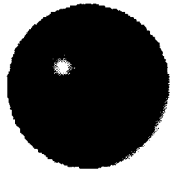
✚ Mass Balance

- ✚ Summary of FPA available for use in the manufacture of fluoropolymers
- ✚ Includes the 13 manufacturing facilities owned and operated by the FMG companies represented
- ✚ Regions
 - North America – [CBI REDACTED]
 - Western Europe – [CBI REDACTED]
 - Japan – [CBI REDACTED]
- ✚ Includes the majority of FPA used in the world



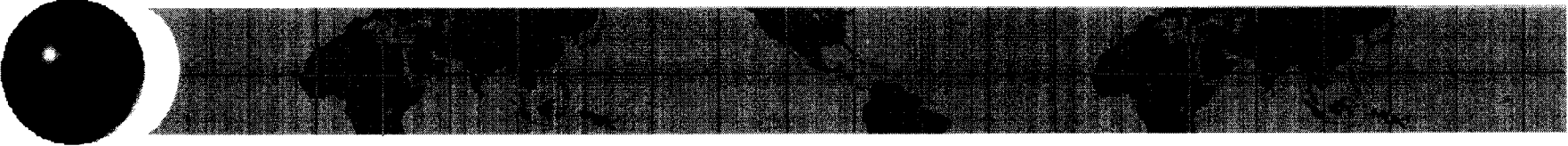
FPA Manufacture and Use

- ⊕ Summary of Mass Balance
- ⊕ FPA Used in FP [CBI REDACTED]
 - ▣ >95% reported as sold
- ⊕ Basis is actual use in calendar year 1999
- ⊕ Use in FP accounts for essentially all of the known FPA manufactured
- ⊕ Utilization of FPA in Other Territories Unknown (e.g. Russia, China)



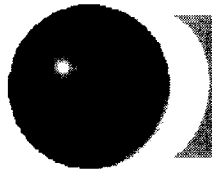
FPA Current Containment

- ⊕ "Containment" concept - means capture for destruction or reprocessing/recovery
- ⊕ Amount of FPA contained
 - ⊠ Reprocessed [CBI REDACTED]
 - ⊠ Destroyed [CBI REDACTED]
- ⊕ "Reprocessed" includes recovery and recycle
- ⊕ "Destroyed" can mean thermal or chemical destruction



FPA Sold in Polymer Product

- ⊕ Summary of Mass Balance (tonnes %)
 - ⊞ FPA in Aqueous Forms [CBI REDACTED]
 - ⊞ FPA in Dry Polymer [CBI REDACTED]
- ⊕ Thermal conversion of aqueous forms into coatings destroys some of the FPA, while some is released – requires testing and evaluation – industry program
- ⊕ Residual FPA in dry polymer is low - lower priority at this stage



FPA in Effluent Streams

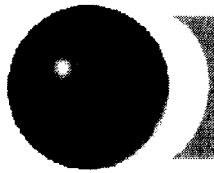
✚ Summary of Mass Balance (tonnes %)

✚ Effluent (Air/Water/Land)[CBI REDACTED]

- Air [CBI REDACTED]
- Water [CBI REDACTED]
- Land [CBI REDACTED]

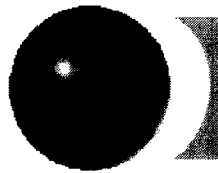
✚ Breakdown by Territory:

- North America [CBI REDACTED]
- Western Europe [CBI REDACTED]
- Japan [CBI REDACTED]



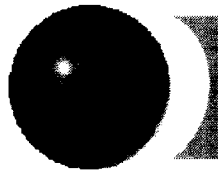
Industry Commitment

- ⊕ Minimum 50% reduction in environmental releases
 - ⊠ Based on current industry releases
 - ⊠ Each company has committed to investigate and adapt control technology to its processes
- ⊕ Within 3-5 years



FPA in Effluent Streams – Industry Priority

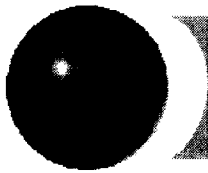
- ⊕ The Industry is committed to develop methods of containment, recovery, and recycle of FPA's
 - ⊠ This is a New Issue for Industry
 - ⊠ Different Manufacturing Processes
 - ⊠ Technologies at Different Stages of Development and Implementation
 - ⊠ We are Investigating Technologies
 - ⊠ Industry Willingness to Share Technologies



EPA/FMG Priorities

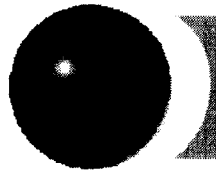
✦ Forward Plans

- ✦ Begin immediately to identify containment, recovery, and recycle routes
- ✦ Continue the toxicology program
 - Include bio-monitoring
- ✦ Start investigation of FPAs in aqueous forms sold to our downstream customers



Other Industry Interfaces

- Present the Industry Program to other Regulatory Groups and Regions
 - METI in Japan
 - OECD in Western Europe
 - Environment Canada
 - Health Canada



EPA/FMG Meeting

- ⊕ Discussion and Feedback
 - ⊞ Toxicology/Environmental Research Program
 - ⊞ Mass Balance Assessment
- ⊕ What we need from EPA
 - ⊞ Feedback on program
- ⊕ Industry needs replacement capacity by end of 2002