

3M Internal Correspondence

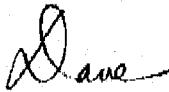
To: Marnie McKerlie – 3M Canada – Fax No.: 8-845-6090
From: D. A. Sanders – Life Cycle Management - 220-10E-10
Subject: Attached
Date: November 16, 1998

Marnie, enclosed are the most recent presentations of Chuck Reich.

P. 2 – 12 to FC Issues Core Team
p. 13-30 to Board of Directors

Let's set a time to review.

Thanks!



Dave

Exhibit

1529

State of Minnesota v. 3M Co.,
Court File No. 27-CV-10-28862

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1529.0001

Draft

Procedures and Guidelines for Business Units Using POSF Chemistry

Uncontrolled Exposures

Definition: When looking at persistent, bio-accumulative substances, the sophistication of users and the number of users may make it difficult to achieve the Operational Priority through product stewardship practices. In these situations, exposures to persistent, bio-accumulative substances can be described as "uncontrolled".

can product stewardship lessen risk of exposure

minimize opportunities for exposure

Least
↑
Desirability From Exposure Viewpoint
↓
Most

- * **Degradable/Metabolic Precursors of PFOS -**
e.g.: K Salts, FC 129 *- dramatic precautions - product stewardship cannot help.*
- * **Non-degradable forms of FC's -**
e.g.: Urethane polymers *- interim product line to replace IC Salts*
- * **Persistent, non-bio-accumulative FC's -**
e.g.: Telomers, C₈ carboxylic-acids
- * **Non-persistent, non-bio-accumulative FC's -**
e.g.: C₆ sulfonyl chemistry
- * **Exit**
- * **Non-persistent, non-bio-accumulative non-FC's** *- reinvention*

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Business Development*

Guiding Principles:

- **Uncontrolled exposures are unacceptable as a long term option.**
- **Direction is to move toward more controlled exposures - exposures where due to the number and/or sophistication of users, minimization can be achieved through product stewardship practices - or to non-persistent, non-bio-accumulative solutions.**
- **Time to transition is permissible as long as direction toward reducing exposures is feasible and has a likelihood of success.**
- **Precipitous actions that are detrimental to our stakeholders are not desired solutions.** *but is a possibility.* *liability for our customers → 3M*
- **Direction will be driven to the exposure control/removal option most aligned with the Operational Priority. Normal business decision factors will then be applied to that option.** *eg, commercial MARK CHODOSH Commercial Care*
- **Benefit trade off to exposure can be made as a business case.** *(SAFETY) NOT PURELY COMMERCIAL* *eg lightwater - strong safety benefits could be a trade off.*

*Subject to continuous reassessment from knowledge gap filling due to health, safety, product stability/environmental fate data, regulatory and/or public reaction data.

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Draft Communication Modes

Guiding Principles:

■ Response Mode

All incoming questions from employees and non-employees will be handled quickly and factually by qualified personnel through a defined process.

■ Proactive Mode

Messages will be delivered to various stakeholder audiences by providing "seeds" and follow-up with update information; e.g., MSDS leading to product stewardship dialog, which may include 3M worker data. Questions which become unanswerable by the employee are handled by the response mode.

■ Reactive Mode

This mode will be prepared and managed for a quick and effective response to a media inquiry. The "Case", messages, 3M and third party speakers, neutral advisory boards, will be drilled and on alert. This reactive mode may become proactive as events unfold.

-3 or 4 key customers in each business product stewardship, responsible case presentation

*PAPER: PICG DONE
PROTECTIVE - DEC/JAN CROWN VANTAGE
SHAW
BULLINGTON/HOPK
HENKEL*

*- proactive precipitate a discussion about FC'S - can we do more to help you re: PRODUCT STEWARDSHIP
- 1 H survey in their plants*

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Decision Making Process

Guiding Principles:

- **The business units closest to the product line will assess and plan their operational options and contingencies with regard to exposure minimization/removal. They will also assess their communications with regard to exposure control, and they will prepare any benefit trade-off to exposure they wish to make.**

- **Final approval of these options will come from the FC Core Team with periodic oversight by the corporate Crisis Management Team/Chemical Oversight Committee.**

- **Existing business/expansion of existing business/as well as "new" product commercialization will follow these procedures.**

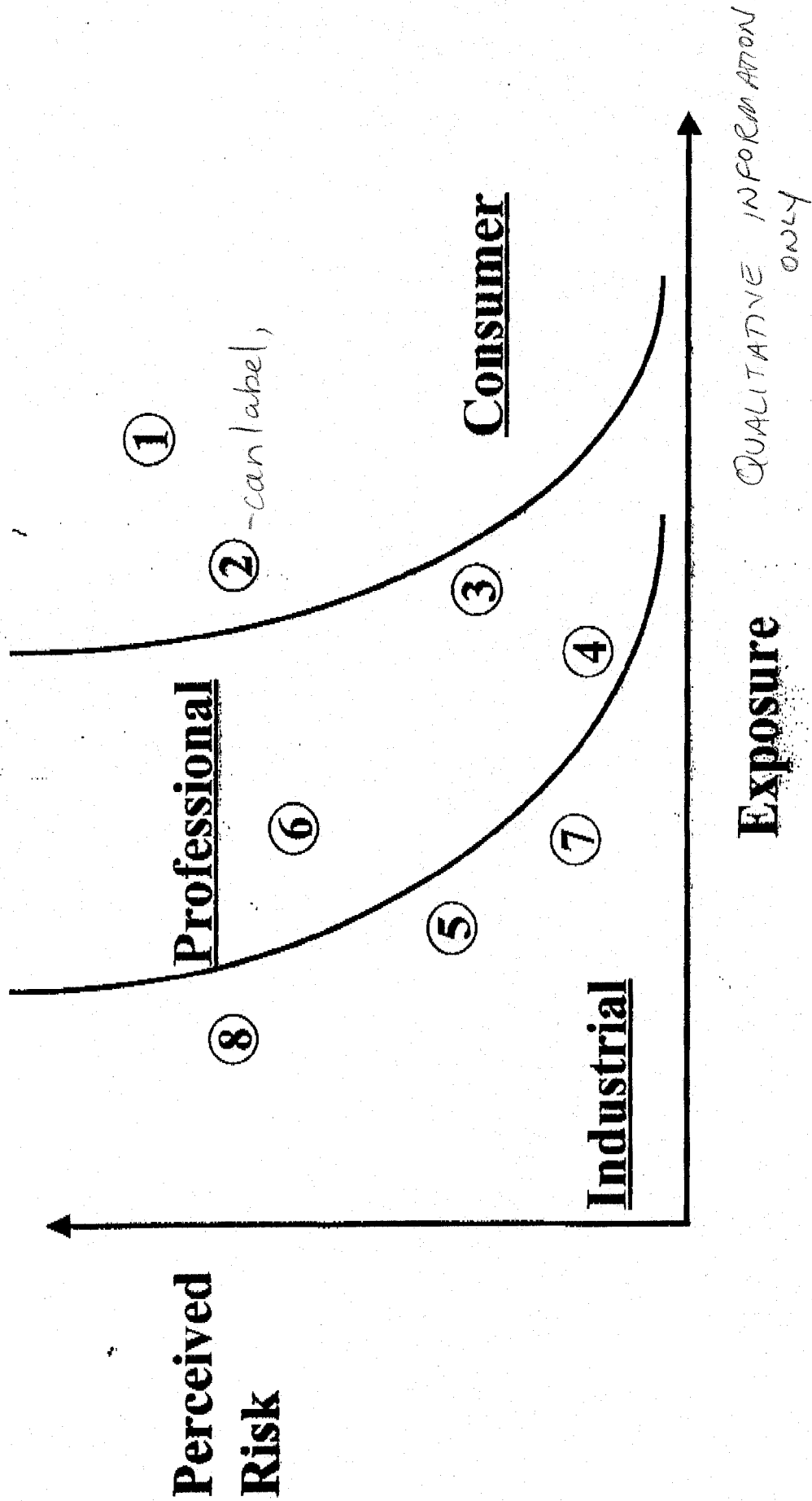
COMMERCIAL & CONSUMER - NEED TO BE BROUGHT UP - TO DATE

*in development
 all the business processes
 INTERMEDIATES
 FORMULATORS
 LARRY SMITH
 AL ZEITZ
 product stewardship
 agents*

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Risk Evaluations



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Preliminary Risk Evaluations

Priorities

1. Household Additives - Performance Chemicals

Window Cleaner - *high risk, high direct exposure*

Denture Cleanser

Shampoo

2. Aerosol Consumer Cans of Scotchgard™ - *relabeling efforts*

3. Professional After-market Treatments

Carpet *Apex number called* *StainSafe*
Apex below called *CommCare - carpet cleaners*

Auto - *degreaser*

Home Textiles

4. Concrete (and porous) Coatings - *outside applications*

Al Zietz

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Risk Evaluations

Priorities

5. **Fire-Fighting Foams** - lower perceived benefits *make due to*

6. **Food**

7. **Intermediates and Distributed Business** *low control, don't know where the products are going*

8. **All Other**

Mill-Applied Scotchgard™ for Carpet, Textiles, Leather

*- product stewardship
- spray equipment and how are we going to do business*

Performance Chemicals - Coating Additives, Mining, Plating/Etching, Conformed Coatings

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***Suggested Criteria for Evaluation of FC Product-Related
Risk Management Options***

The following criteria are proposed as guidance for evaluating the appropriateness of risk management options, up to and including product deselection, aimed at implementing the Operational Priority. These criteria are not meant to be exclusive - business judgment concerning resource allocation, viability of a product or application and near or long term strategic considerations will also play a role. The criteria are as follows:

1. Feasibility and likelihood of success of 3M stewardship efforts to reduce or eliminate human exposure or environmental impact.
2. Existence of a responsible third party with legal and stewardship obligations to ensure end use product safety and to minimize exposure to potentially exposed populations or the environment.
3. The specific product or application is safe for its intended use when used as instructed and does not contribute disproportionately or unnecessarily to the overall exposure of humans and the environment to 3M FC's.

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*Suggested Criteria for Evaluation of FC Product-Related
Risk Management Options (Cont.)*

4. The constellation of public perceptions that tend to increase corporate communications risk are generally absent or are capable of being controlled and managed to an acceptable degree.
5. The risk management decision is consistent with 3M's core values of honesty and integrity in all our operations.
6. The risk management option has taken account of customer needs, particularly those involving restricted use applications with demonstrably high benefits and no immediately available feasible alternative product or source. *es highwater*

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A Draft List of Considerations That May Affect

Overall Risk Assessments

Issues

- ✓ Direct Exposure *to end user*
- ✓ Potential for Misuse
- ✓ Extent of Exposed Population
- ✓ Sensitive Populations *children, pregnant women, elderly*
- ✓ High Single Exposure Potential
- ✓ 3M Direct/Indirect Sale (Ability to Control Exposures) *distribution*
- ✓ Ease of Communications with End Users *- labeling*
- ✓ Data/Information Gap
- ✓ Reputation
- ✓ Potential for Public Outrage/Indignation
- ✓ Legal
- ✓ Ability to Apply Control Measures
- ✓ Safety Benefits

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HIGH DEGREE OF RISK

RISK = EXPOSURE X OUTRAGE

Constellation of Public Perceptions

- 1. Is it Voluntary or Coerced? ✓
- 2. Is it Natural or Industrial? ✓
- 3. Is it Familiar or Exotic? ✓
- 4. Is it Not Memorable or Memorable? ✓
- 5. Is it Not Dreaded or Dreaded? ✓
- 6. Is it Chronic or Catastrophic? ✓
- 7. Is it Knowable or Not Knowable? ✓
- 8. Is it Controlled by Me or by Others? ✓
- 9. Is it Fair or Unfair? ✓
- 10. Is it Morally Irrelevant or Morally Relevant? ✓
- 11. Can I Trust You or Not? ✓
- 12. Is the Process Responsive or Unresponsive? ✓
- 13. Effect on Vulnerable Populations NO
- 14. Delayed vs. Immediate Effects OR NO
- 15. Effect on Future Generations DON'T KNOW
- 16. Identifiability of the Victim CAN'T W/O BLOOD SAMPLES
- 17. Elimination vs. Reduction
- 18. Risk-Benefit Ratio
- 19. Media Attention HIGH
- 20. Opportunity for Collective Action YES

What about these issues from a Canadian point of view?

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3M Fluorochemicals EHS&R Initiative

Issue Summary

- 3M discovery of 3M fluorochemical in blood of general population AUG 1997
- No medical or scientific basis to attribute any adverse health effects to 3M products
- Developing and implementing plans to minimize exposures and emissions
- Accelerating scientific studies - health, safety, environmental issues

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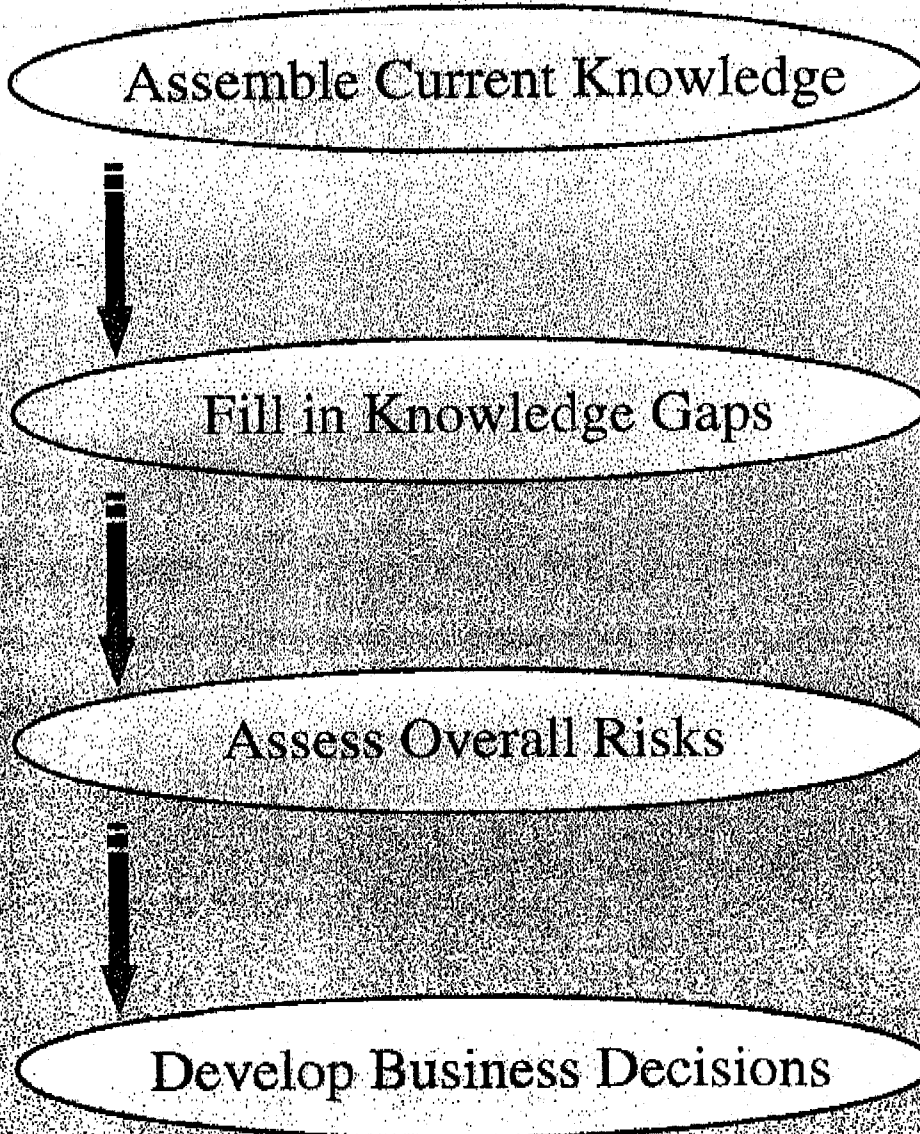
TO 3M BOARD OF DIRECTORS /
CHEMICALS BREAKFAST CLUB

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Fluorochemical EHS&R Initiative

The Business Decision Process

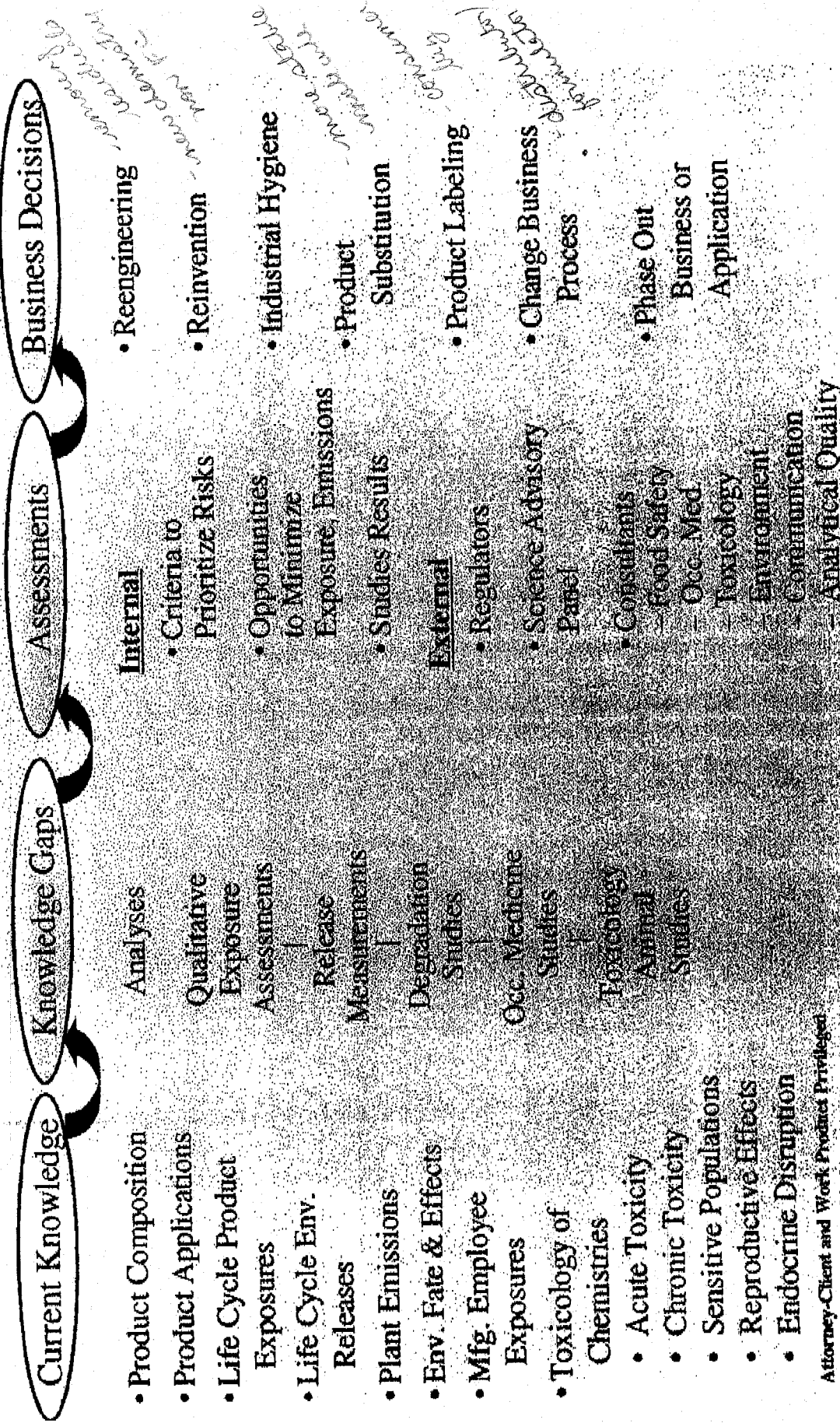


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The Business Decision Process • Risk = Hazard x Exposure



- Product Composition
- Product Applications
- Life Cycle Product Exposures
- Life Cycle Env. Releases
- Plant Emissions
- Env. Fate & Effects
- Mfg. Employee Exposures
- Toxicology of Chemistries
- Acute Toxicity
- Chronic Toxicity
- Sensitive Populations
- Reproductive Effects
- Endocrine Disruption

- Analyses
- Qualitative Exposure Assessments
- Release Measurements
- Degradation Studies
- Occ. Medicine Studies
- Toxicology Animal Studies

Internal

- Criteria to Prioritize Risks
- Opportunities to Minimize Exposure Emissions
- Studies Results

External

- Regulators
- Science Advisory Panel
- Consultants
 - Food Safety
 - Occ. Med
 - Toxicology Environment
 - Communication
 - Analytical Quality

• Reengineering

• Reinvention

• Industrial Hygiene

• Product Substitution

• Product Labeling

• Change Business Process

• Phase Out Business or Application

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Fluorochemical EHS&R Initiative

Understanding the Science

Assemble Current Knowledge

- Product Composition
- Product Applications
- Life Cycle Product Exposures
- Life Cycle Environmental Releases
- Plant Emissions
- Environmental Fate and Effects
- Occupational Employee Exposures (3M and Customer)
- Toxicology of Chemistries
 - Acute/Chronic Toxicity
 - Reproductive Effects
 - Sensitive Populations
 - Endocrine Disruption
 - Food Safety
 - Eco-Toxicity

Fill in Knowledge Gaps

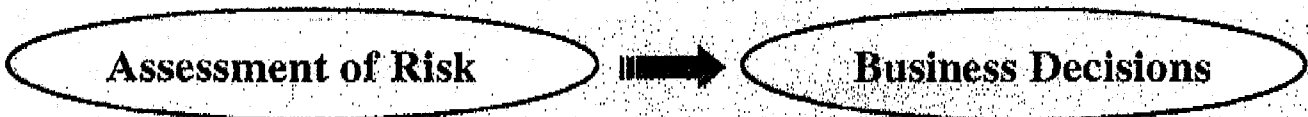
- Analyses
- Qualitative Exposure Assessments
- Release Measurements
- Degradation Studies
- Battelle Studies
- Occupational Medicine Studies (IH, Blood Levels)
- Animal Studies to Determine Effects

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Assessing the Science - Determination of Business Decisions



Internal

- Develop Criteria to Prioritize Risks
- Assess Options to Minimize Risks
- Studies Results

External

- Regulators
- Science Advisory Panel
- Consultants and Oversight
 - Toxicology
 - Public Health
 - Epidemiology
 - Analytical Quality
 - Sensitive Populations
 - Food Safety
 - Eco Toxicity
 - Environmental Fate

Business Decisions

- Reengineering
- Reinvention
- Industrial Hygiene
- Product Substitution
- Product Labeling
- Change Business Process
- Phase Out of Business or Application

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Regulatory

Food Safety

- Continuing Dialogue with FDA
- Contacted German BgVV
- Contacted Health Canada

In compliance - meeting requirements with paper/packaging products

Public Health / Environment

EPA

- Filed two (8e) Communications
 - PFOS Findings
 - Multigeneration Rat Study
- Proactively seeking meeting and guidance

Canada, Europe, Japan - After EPA meeting.

Dec 14
Reich,
Weppner,
Hakes,
Zoebel

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BANDERIS D/REAFF/TE/REICH/ENH/ST/TH/...

- emerging class of new compounds

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Toxicology Studies

**Objectives: Develop Understanding/
Determine Effects - PFOS**

30 studies

- Acute Toxicity
- Chronic Toxicity
- Carcinogenic Effects
- Reproductive Effects
- Embryo/Fetal Development
- Endocrine Disruption
- Absorption/Distribution/Metabolism/Excretion
- Mechanism Studies

Animal Studies



- * Establish No Effect Levels
- * Relate No Effect Levels to Levels of PFOS Found in 3M Workers and General Population

*RATS,
PRIMATES,
RABBITS*

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Environmental Studies- Battelle Assessment

- Product Stability

- * Chemical Degradation

- * Biodegradation

Q1 199

- Environmental Sampling - Targeted Geographies

- * Surface Water e.g. * Dalton, GA

- * Drinking Water * Decatur, AL

- * Sediments * Isle Royale

- * Landfill Leachate * Boston

- * Wastewater Treatment * New Orleans

- * Air Emissions

- "Market Basket" Sampling - FDA Protocol

- * Locally Grown Foodstuffs

- Meat, Vegetables, Cereals, Dairy,

- FISH

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Exposure Assessments/Reductions

- **Residuals reduced > 50% Paper & Packaging**
- **Initiated Program for "Trunk" Reductions - Entire Product Line**
- **Decatur Plant Exposure Assessment Complete - IH Program Result**
- **Initiated Plant Mass Balance/Gas Emissions Teams**
- **Implemented Wastewater Extraction Program - Decatur**
- **Completed Qualitative Product Exposure Assessments**
- **Distributed Expanded MSDS - US/Global**
- **Considering Appropriate Labeling Changes**
 - **Consumer Aerosols**
 - **Aftermarket**

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Communications

Telephone Response Mode

- Inquiry Process Defined
- Training Complete Product Stewards/Network
- Trial Drills to Test Readiness

Proactive Mode

- Updated MSDSs
- Started Product Stewardship Initiative
 - Paper/Packaging Channel
 - Carpet/Upholstery Training
- Consumer Labeling Issues - Aerosols
- Employee Updates

Media

- Stakeholder Messages Drafted
- Spokesperson Training
- Consultants
- Science Advisory Panel
- Third Party Spokespersons

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3M Fluorochemicals EHS&R Initiative

Progress Report

- Meeting FDA commitments for reduced residuals in indirect food contact applications
- Notified EPA via TSCA 8(e) filings.
 - * Awaiting EPA evaluation
 - * Updating support materials
- Notified OUS Regulators: Germany, Canada
- Implemented broad range of tox., occ. medicine studies
 - * Interim results continue to validate product safety and employees are not at risk for adverse health effects
- Initiated Environmental Fate & Effect Study - Battelle
- Continuing plant emissions assessment and implementing options for reduction
- Preparing comprehensive exposure assessment/industrial hygiene initiative for all product applications
- Initiated Reengineering/Reinvention Program to optimize manufacturing processes and product purity
- Assembled external Scientific Advisory Panel and Third Party Spokespersons

3M Fluorochemical EHS&R Initiative

Science Advisory Panel

Provide Independent Advice and Guidance to 3M on Public Health and Ecological Issues Relating to 3M Fluorochemicals

<u>Name</u>	<u>Position</u>	<u>Discipline</u>
Gil Omenn, M.D., Ph.D.	Exec. V.P. Medical Affairs Univ. Michigan	Health Policy Risk Assessment
Ray Greenberg, M.D., Ph.D.	V.P. for Academic Affairs Provost, Medical Univ. of S.C.	Epidemiology Public Health Cancer
Elaine Faustman, Ph.D.	Co-Chair, Div. Envir. Health Univ. Washington	Toxicology
Bob Huggett, Ph.D.	V.P. Research & Grad. Studies Mich. State Univ.	Ecotoxicity Environmental Fate
Don Kennedy, Ph.D.	Bing Prof of Env. Science President Emeritus Stanford Univ.	Public Health Policy

Consultants to the Panel

Jack Moore, Ph.D.	President & CEO Inst. For Evaluation of Health Risks	Toxicology Risk Assessment
Joe Rodricks, Ph.D.	Dir. Health Sciences Environ Inc.	Toxicology Risk Assessment

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Third Party Spokespersons

Elizabeth Whelan,
Sc.D., MPH

President, American Council
on Science and Health

Public Health
Policy

Christopher Wilkinson,
Ph.D.

Former Prof. Of Insecticide
Chemistry and Toxicology,
Cornell

Toxicology

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RENDERED BY REAPPY/REK/EN/SH/CH/ST

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Consultants

Communications

Myles Martel, Ph.D.	Martel & Associates	Comm. Strategies
A. John Adams, John Heinze, Ph.D.	Adams & Associates	Comm. Risks Public Issue Messages Media Monitoring
Richard Wirthlin, Ph.D.	Wirthlin Worldwide	Opinion Surveys Comm. Strategies

Occupational Medicine

Robert McCunney, Ph.D.	Dept. Chair, Occ. Environmental Medicine MIT	Medical Surveillance
Tim Church, Ph.D.	Assoc. Professor Univ. of Minnesota	Statistics
Jack Mandel, Ph.D.	Prof. And Chair-Div. of Occupational Medicine & Environmental Health Univ. of Minnesota	Epidemiology

Analytical Chemistry

Grant Phimmer, Ph.D.	Professor-Dept of Physics N.C. State Univ.	Gas Phase FTIR
Robert Voyksner, Ph.D.	Research Triangle Inst.	LC/MS Technique
	Quest Analytical Inc.	Quality Assurance
	Quality Associates Inc.	GLP Oversight
Jack Henion, Ph.D.	Prof. of Toxicology Analytical Toxicology Dept. Cornell University	Analytical Toxicology

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Outside Counsel

<u>Name</u>	<u>Firm</u>	<u>Discipline</u>
Chuck O'Connor Attorney	McKenna & Cuneo Washington, D.C.	<ul style="list-style-type: none"> • EPA Regulatory Practice • Toxic Substances Control Act • FIFRA (Pesticides) Law • Consumer Products Safety Act
Dale Larson Attorney	Larson & Counsel St. Paul, MN	<ul style="list-style-type: none"> • Insurance Law • Corporate and Product Liability
Julie Hatcher Attorney	Latham & Watkins Washington, D.C.	<ul style="list-style-type: none"> • Environmental Law • EPA Regulatory Practice

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Consultants (continued)

Environmental Fate & Effects

Harry Painter, Ph.D.	Managing Director Fresh Field Analysis Ltd., (U.K.)	Biodegradation
Joe Fiksell, Ph.D.	Director, Life Cycle Management Battelle Institute	Environmental Fate & Effects
Mario Molina, Ph.D. (Nobel Laureate)	Martin Professor Atmospheric Chemistry MIT	Atmospheric Science
John Giesy, Ph.D.	Distinguished Prof., Dept. Zoology National Food Safety & Toxicology Center Professor, Mich. State Univ.	Wildlife Biology
Don MacKay, Ph.D.	Professor & Dir. Env. Modeling Lab. Univ. of Toronto	Atmospheric Modeling
Don Crosby, Ph.D.	Professor Univ. of California-Davis	Chemical Degradation Processes
Craig Criddle, Ph.D.	Dept. of Environmental Science Stanford Univ.	Biodegradation Processes
Ralph Cicerone	Daniel G. Aldrich Prof. Earth Sciences Dept. Chancellor Univ. of CA - Irvine	Env. Science

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