

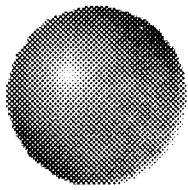
The Shanghai Health Study

Patsy Clegg

Chair, Oversight Committee

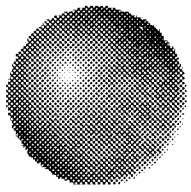
Shell Chemicals, LP

May 2004



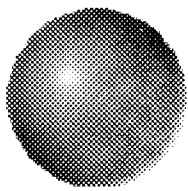
What is the Shanghai Health Study?

- A long-term clinical study to investigate the potential causes and development of lympho-hematopoietic diseases (diseases of the lymphoid organs, blood and bone marrow) as related to benzene
- A project of Fudan University Medical Center; University of Colorado Health Sciences Center; Applied Health Sciences - an independent U.S. research firm; Chinese public health agencies; and Shanghai hospitals



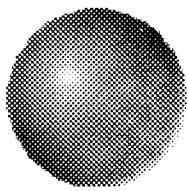
Shanghai Health Study Purpose

- ✦ To gain a quantifiable understanding of the relationship between benzene exposure and potential associated cancer risks



Path to developing the study:

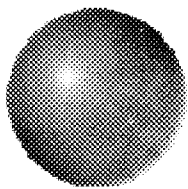
- Pre-97: Benzene exposure associated with AML
- 97: NCI published conclusions from China study that:
 - Benzene can cause NHL
 - AML develops at exposures lower than previously known – no threshold observed
- 98-00: NCI Methodology criticized
Feasibility studies in Shanghai
- 01: Australian Institute of Petroleum's (AIP)
Health Watch Study
 - Association with all leukemias, including chronic lymphocytic leukemia
 - No association with NHL or multiple myeloma
- 01: Benzene Health Research Consortium formed to:
 - do a study to test conclusions
 - answer questions of disease progression and biomarkers



Benzene exposure and cancer

Conclusions from pre-1997 Epidemiology

- ❖ Only acute myelogenous leukemia (AML) associated with benzene
 - No risk at exposures < 1 ppm
 - Clear risk at exposures > 20 ppm
 - Insufficient data at 1-20 ppm to assess risk



The Shanghai Health Study

1. Case Control Study

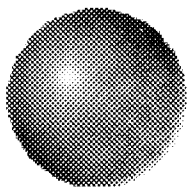
Traditional, prospective epidemiology study to determine risk of AML, NHL among benzene exposed workers
- 450 AML and 450 NHL patients into study

2. Disease Progression Study

Prospective study on relationship of non-cancer bone marrow disease and benzene induced AML

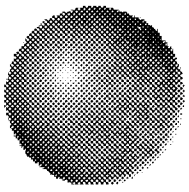
3. Molecular Epidemiology Study

Prospective study to establish quantitative relationship between exposure and effect



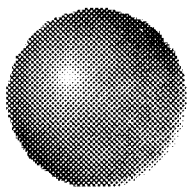
Uniqueness of Shanghai Study

- Prospective research
 - Patients at participating hospitals suspected of having a lymphoid, blood or bone marrow disease will be referred to the SHS
 - Patients' diets, environmental exposures and family histories will be recorded
 - Patient disease progression followed at supporting hospitals



Uniqueness of Shanghai Study

- Study will be able to examine primary diagnostic and medical data in real time
- First-hand exposure reports are more reliable than second-hand or reconstructed information
- State-owned databases document worker histories

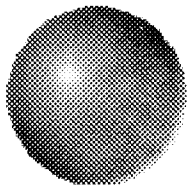


Uniqueness of Shanghai Study

- Robust data set

- State-maintained benzene exposure and health effects databases documented from 1970s
- Benzene related health effects are #2 in reported chronic occupational health hazards in China in 2001 (*Source: Ministry of Public Health*)
- Large range of exposure levels from a variety of occupational sources

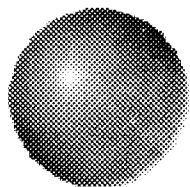
- Regulatory authorities interest in improving benzene exposure regulation and enforcement



Quality, Independent Science

- ◆ All protocols reviewed and approved by external Institutional Review Boards (IRB's)
 - Govern use of human subjects
 - U.S. and China independently

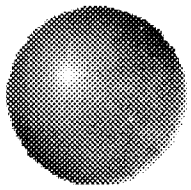
- ◆ Shanghai Health Study independent review panels
 - International Ethics Review Panel
 - International Scientific Review Panel
 - 12 members
 - 6 scientific disciplines
 - Involved during entire project



Benzene Health Research Consortium

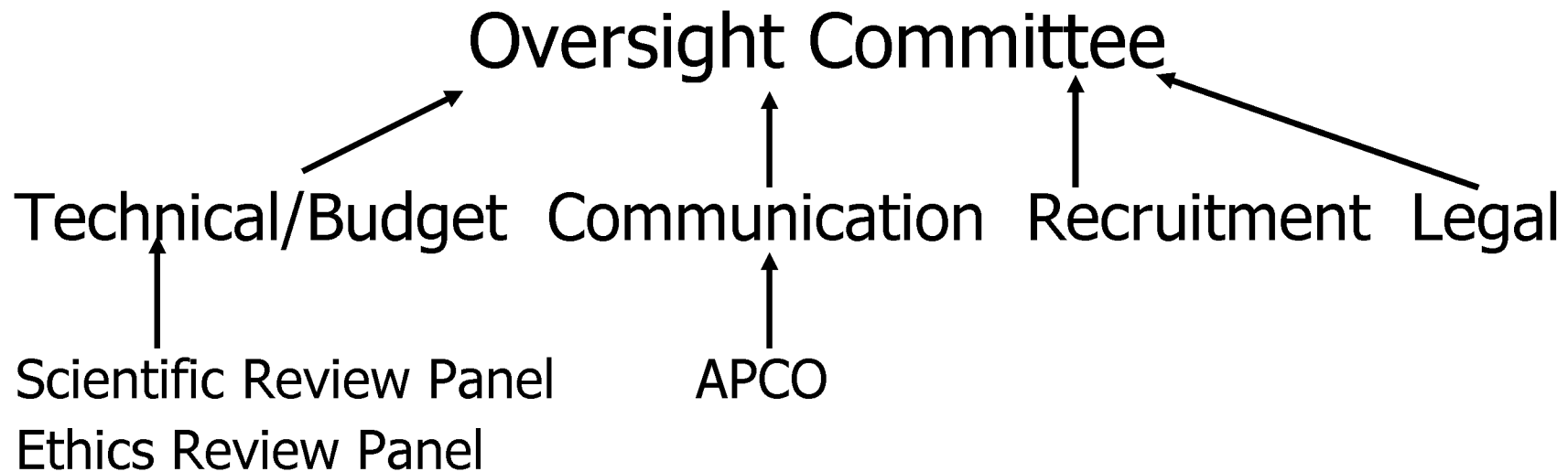
Sponsoring Companies

- BP
 - ChevronTexaco
 - ConocoPhillips
 - ExxonMobil
 - Shell Chemicals, LP
-
- Marathon/Ashland providing additional support

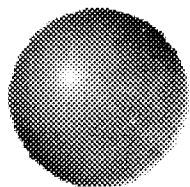


Benzene Health Research Consortium

Organization



API Administrative Support



Shanghai Health Study

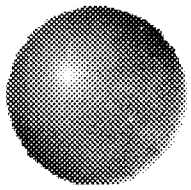
Study Participants

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Dr. Otto Wong, Applied Health Sciences
Dr. Fu Hua, Fudan University

Collaborators: ExxonMobil Biomedical Sciences

Chinese Participants: Fudan University School of Medicine
26 area Shanghai hospitals
Shanghai Municipal Center for Disease Prevention
Shanghai Hematology Society
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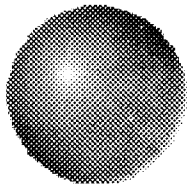
Internal Review Boards U of Colorado, Fudan University, AHS



Shanghai Health Study

Study Time Line

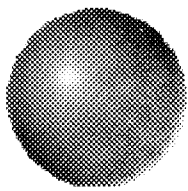
Aug 01	Consortium Formed
3/4Q01	Protocols Reviewed
2002	Lab constructed, equipped at Fudan; technicians trained
3Q03	Began accruing cases
Aug 03	First Annual Meeting
4Q03	Opening Ceremony in Shanghai
Aug 04	Second Annual Meeting
2007/8	Report



Shanghai Health Study

Costs

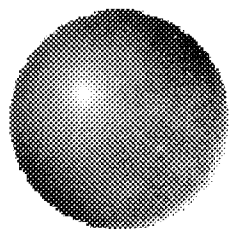
❖	Budget	\$ 21.08M
❖	Funding	\$ 21.08M



Shanghai Health Study

Summary

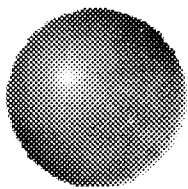
- Opportunity to obtain a better understanding of the mechanism of benzene induced disease in humans.
- Significant impact on benzene risk assessment.
- Highest Quality of Science:
 - employ state-of-the-art biological and epidemiological science
 - represent sound product stewardship
 - exemplify best practices in research ethics
 - depend upon partnership of industry, governments, academia and public



The Shanghai Health Study

Patsy Clegg

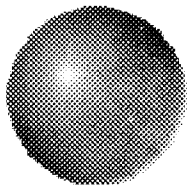
October 2002



The Shanghai Health Study

❖ Path to developing the study:

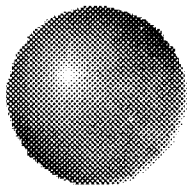
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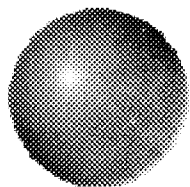
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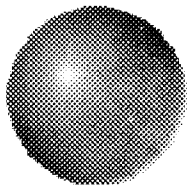
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Benzene Health Research Consortium

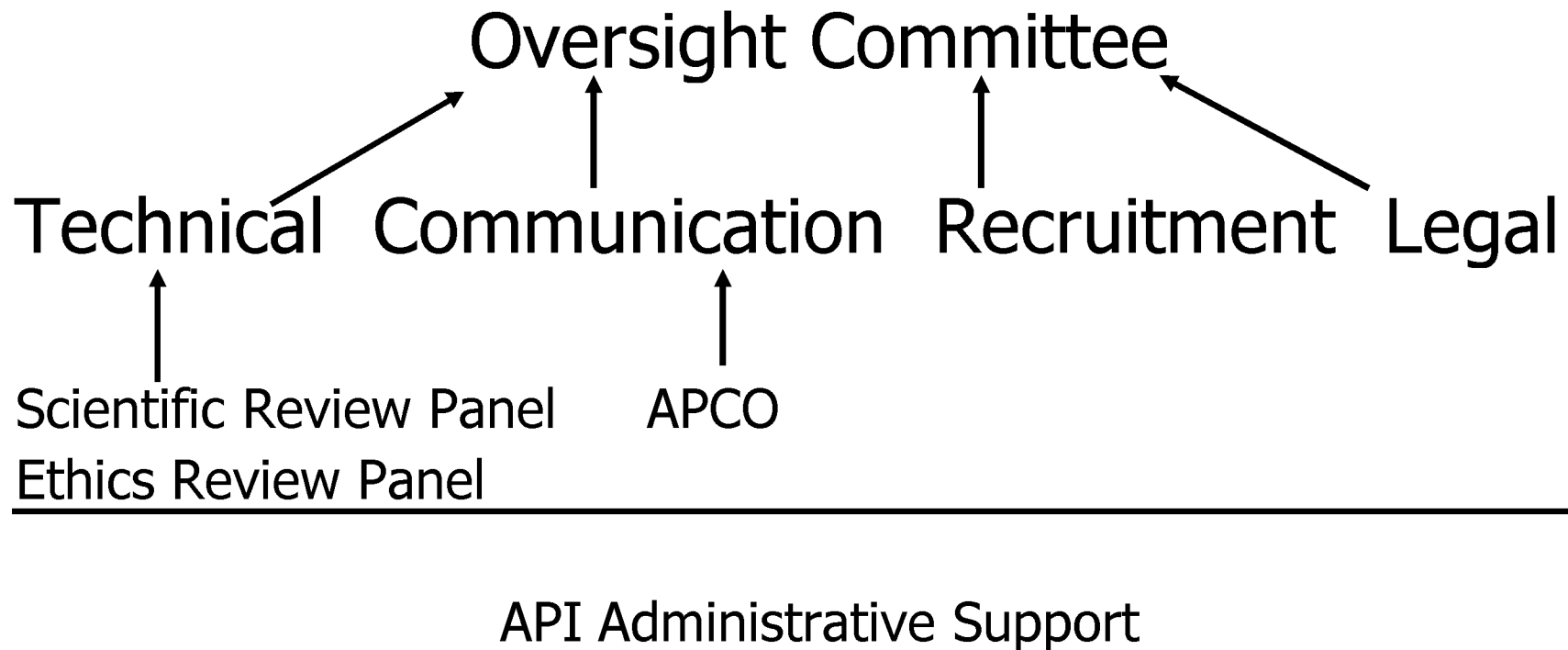
Sponsoring Companies

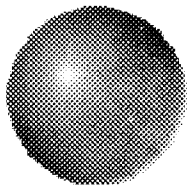
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Benzene Health Research Consortium

Organization





Shanghai Health Study

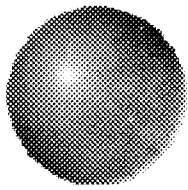
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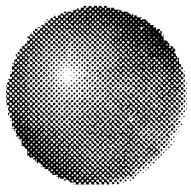
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Shanghai Health Study

Study Time Line

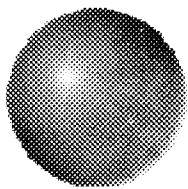
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1Q03	Begin accepting cases
2Q03	Opening Ceremony in Shanghai
Aug 03	First Annual Meeting
2007	Report



Shanghai Health Study

Costs

- ❖ Budget \$22.5M
- ❖ Funding \$16.5M
- ❖ Recruitment Plan to gain additional support



Shanghai Health Study

Summary

- ◆ Opportunity to obtain a better understanding of the mechanism of benzene induced disease in humans.
- ◆ Significant impact on benzene risk assessment.
- ◆ Highest Quality of Science:
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