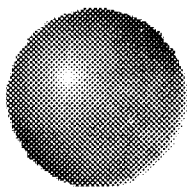


The Shanghai Health Study

Patsy Clegg/Stuart Cagen

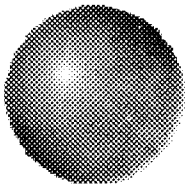
March 2003



The Shanghai Health Study

❖ Path to developing the study:

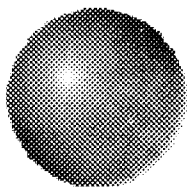
- Pre-97: Benzene exposure associated with AML
- 97: NCI published conclusions from China study that:
 - **Benzene can cause NHL**
 - **AML develops at exposures lower than previously known – no threshold observed**
- 98-00: NCI Methodology criticized
Feasibility studies in Shanghai
- 01: Benzene Health Study 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 < 1ppm
 - Clear risk at exposures > 20 ppm
 - Insufficient data at 1-20 ppm to assess risk



The Shanghai Health Study

1. Case Control Study

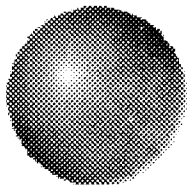
Traditional epidemiology study to determine risk of AML, NHL among benzene exposed workers

2. Disease Progression Study

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

3. Molecular Epidemiology Study

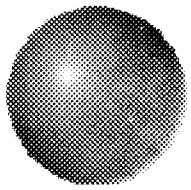
Prospective study to establish quantitative relationship between exposure and effect



Benzene Health Research Consortium

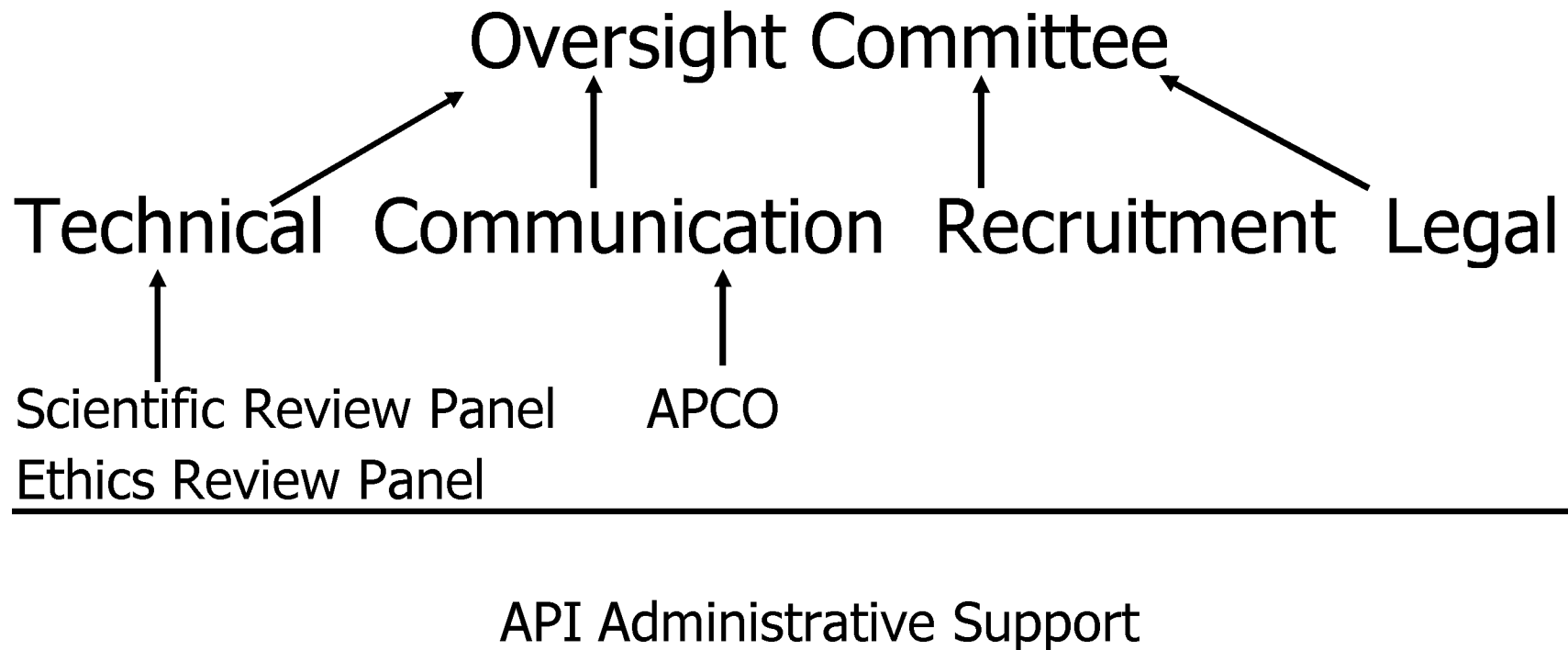
Sponsoring Companies

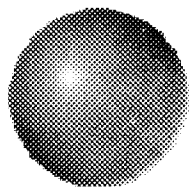
- BP
- ChevronTexaco
- ConocoPhillips
- ExxonMobil
- Shell Chemicals, LP



Benzene Health Research Consortium

Organization





Shanghai Health Study

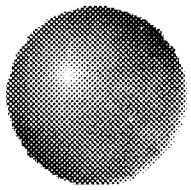
Study Participants

Principal Investigators: Dr. Richard Irons, U of Colorado Health Sciences Center
Dr. Otto Wong, Applied Health Sciences
Dr. Fu Hua, Fudan University

Collaborators: ExxonMobil Biomedical Sciences

Chinese Participants: Fudan University School of Medicine
16 area Shanghai hospitals
Shanghai Municipal Center for Disease Prevention
Shanghai Hematology Society
Shanghai Pathology Institute for Public Health Supervision
Shanghai Public Health Bureau

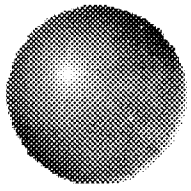
Internal Review Boards U of Colorado, Fudan University



Shanghai Health Study

Study Time Line

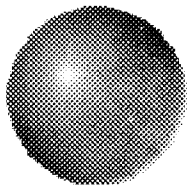
Aug 2001	Consortium Formed
3/4Q01	Protocols Reviewed
2002	Lab Constructed and Equipped at Fudan
1Q03	Begin accepting cases
2Q03	Opening Ceremony in Shanghai
Aug 03	First Annual Meeting
2007	Report



Shanghai Health Study

Costs

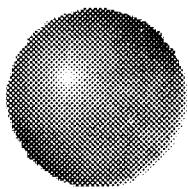
- ❖ Budget \$22.5M
- ❖ Funding \$16.5M
- ❖ Recruitment Plan to gain additional support



Shanghai Health Study

Summary

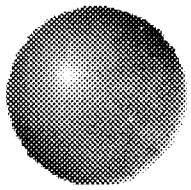
- ◆ Opportunity to obtain a better understanding of the mechanism of benzene induced disease in humans.
- ◆ Significant impact on benzene risk assessment.
- ◆ Highest Quality of Science:
 - employ state-of-the-art biological and epidemiological science
 - represent sound product stewardship
 - exemplify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



Shanghai Health Study

❁ Issues: 1) Study justification

- ❁ In addition to prior NCI study, more recent studies from Australia have raised additional hazard and new risk questions. While EU industry groups(CEFIC and CONCAWE) are considering additional work for clarification, the Shanghai program addresses these questions in a more fundamental way, particularly with regard to disease progression.
- ❁ Shanghai study will also help focus of children's health assessments, regardless of outcome of tier 1 VCCEP case.
- ❁ External affairs/NGO opportunities are recognized.



Shanghai Health Study

❖ Issues: 2) Problems

- Under funding: Current shortfall critical.
 - Without additional \$ 6 million, investigators suggest lack of closure for all studies. API 'safety net' uncertain. Prolonged uncertainty can be paralyzing.
- Distractions: investigators might seek outside (eg NIH) funding of 'side' projects.
- Accountability: uncertainty regarding connections between funding timeline and study milestones. Study completion cost overruns ('surprises') possible, with sponsors currently under informed.
- Transparency: With time, losing added value of engaging non-industry participants (government and NGO).

Shell Chemicals