

Public Health Information Network Stakeholders' Conference - 2003

BioWatch and PHIN – Considering Environmental Surveillance for Bioterrorism

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Environmental Surveillance for Bioterrorism - Concept

- Federal initiative to address vulnerability of major metropolitan areas to BT attacks
- Utilizes existing:
 - EPA Air Quality Monitoring (AQM) infrastructure,
 - DoE air sampling technologies, and
 - CDC/LRN network to perform confirmatory laboratory analyses
- Focuses on outdoor, large scale, airborne releases of selected BT agents
- Deployed in a number of large metropolitan areas



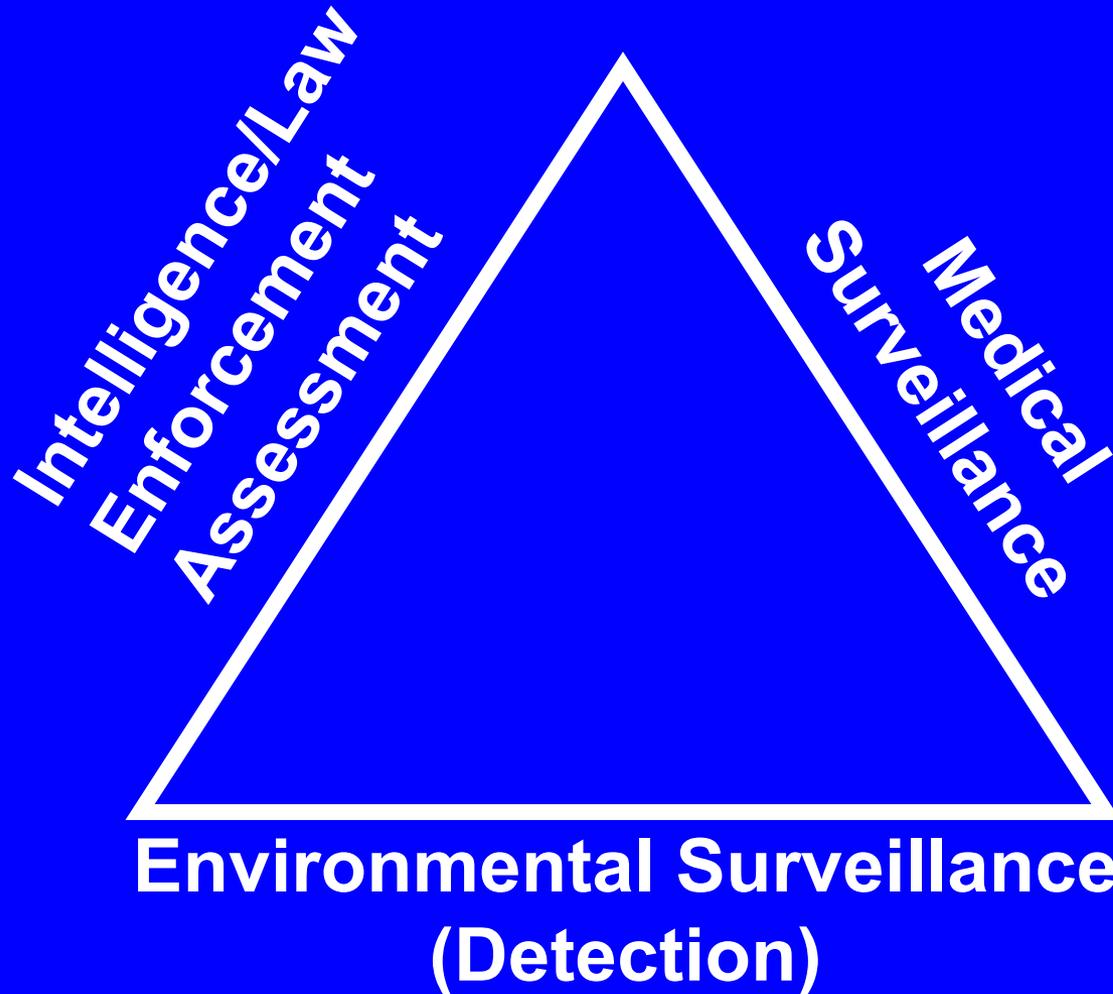
Environmental Surveillance for Bioterrorism - Objectives

Create *Detect to Prevent* opportunities

- Recognize a BT attack soon after release within the incubation period of select BW agents
- Confirm it with high confidence
- Mobilize medical & public health response to provide timely preventive measures



Conceptual Framework For Early Detection/Recognition of BT Attacks



Rapid Laboratory Testing

Primary screen

- ✓ Low pass survey for organism identification

Secondary test

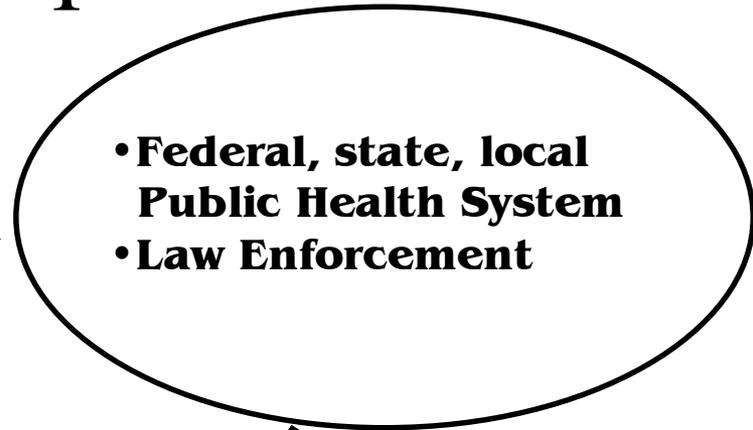
- ✓ Expanded analysis of chromosome with highly discriminating DNA signatures



Integrating Terror Detection and Initial Response

Input Signals

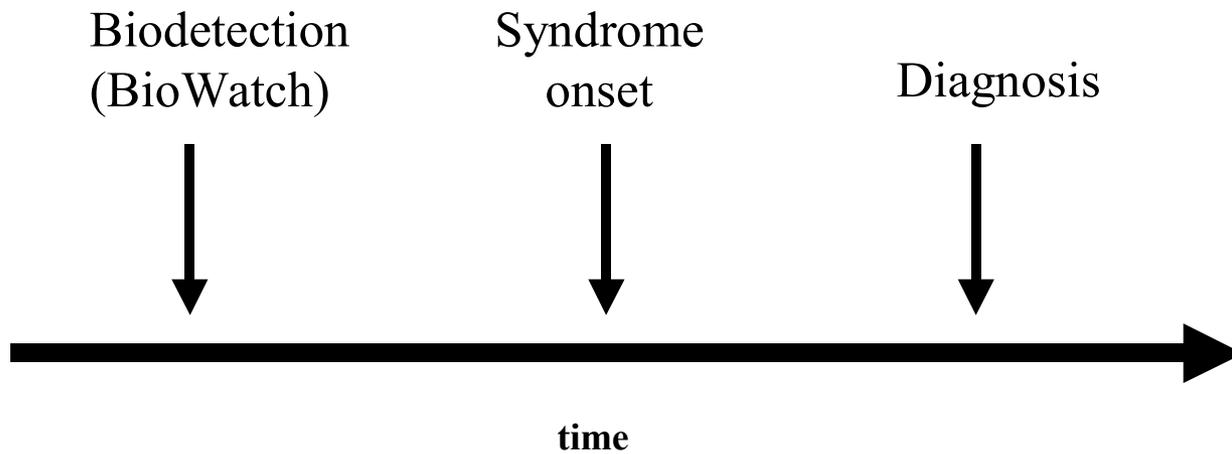
- Laboratory reports
- Case reports
- Cluster analysis
- Health system data
- Intelligence reports
- Biodetectors (**BioWatch**)
- Chemical detectors
- Radiation detectors



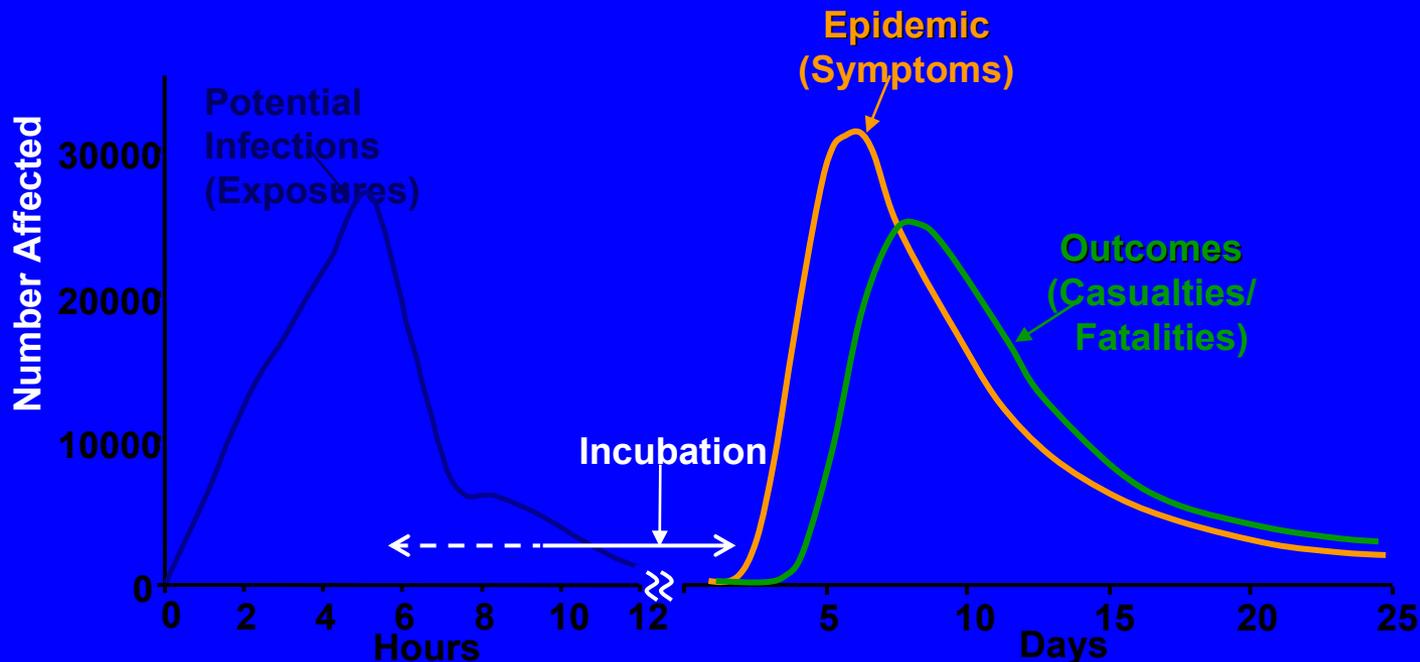
Response

- Immediate public health measure
- Enhance and integrate input signals
- Enhance case detection
- Alerting
- Public communication
- Environmental sampling when indicated

Potential Input Signals for Terror Detection



Environmental BT Surveillance meets Classical Epidemiology



Accuracy: PPV & Prevalence

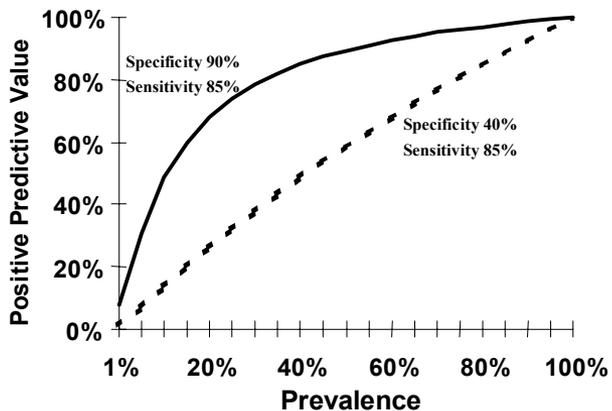
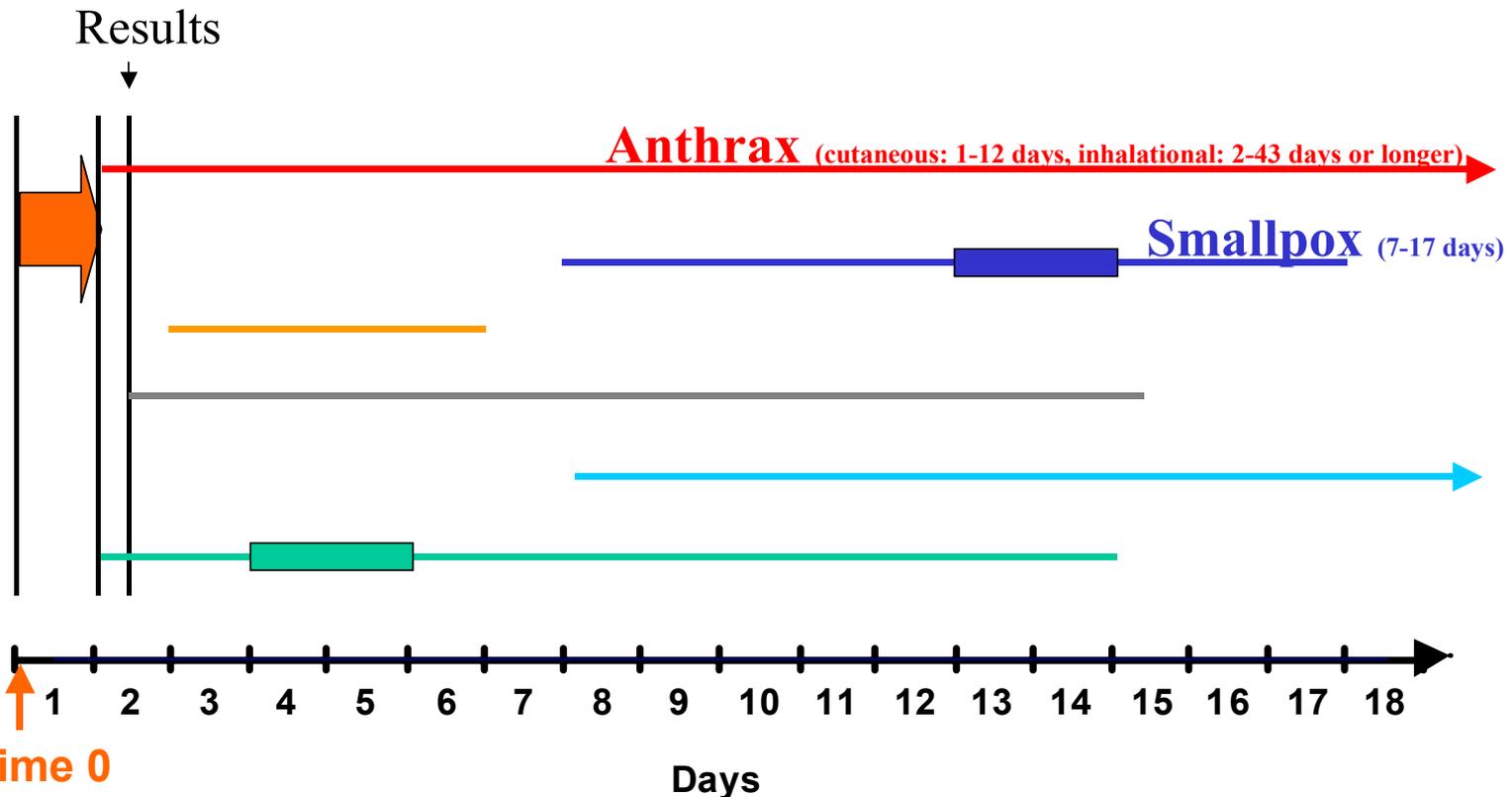


Figure: BioWatch – Environmental Sampling and Testing in Relation to Incubation Periods of Selected Agents



BioWatch involves a 24 hour air sample, followed by laboratory testing for which results will be available in 8-12 hours. If exposure were to occur at the beginning of the sampling time frame, initial cases for several of these diseases, if they are going to occur, could occur soon after results are available.*Sources: CDC

(<http://www.bt.cdc.gov/Agent/agentlist.asp>);

Infectious Disease Society of America (<http://www.idsociety.org/BT/ToC.htm>)

BioWatch and PHIN

- Environmental Sampling
- Laboratory Testing and Results Reporting
- Notifications
- Public Health Response
- Communications with the Public
- Response management and follow up



BioWatch and PHIN

- Environmental Sampling
- Laboratory Testing and Results Reporting



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BioWatch - Notifications

- Need rapid, efficient notifications
- Varied backgrounds & responsibilities - public health, environmental, law enforcement
- Various jurisdictions - local, state, federal
- Sensitive information

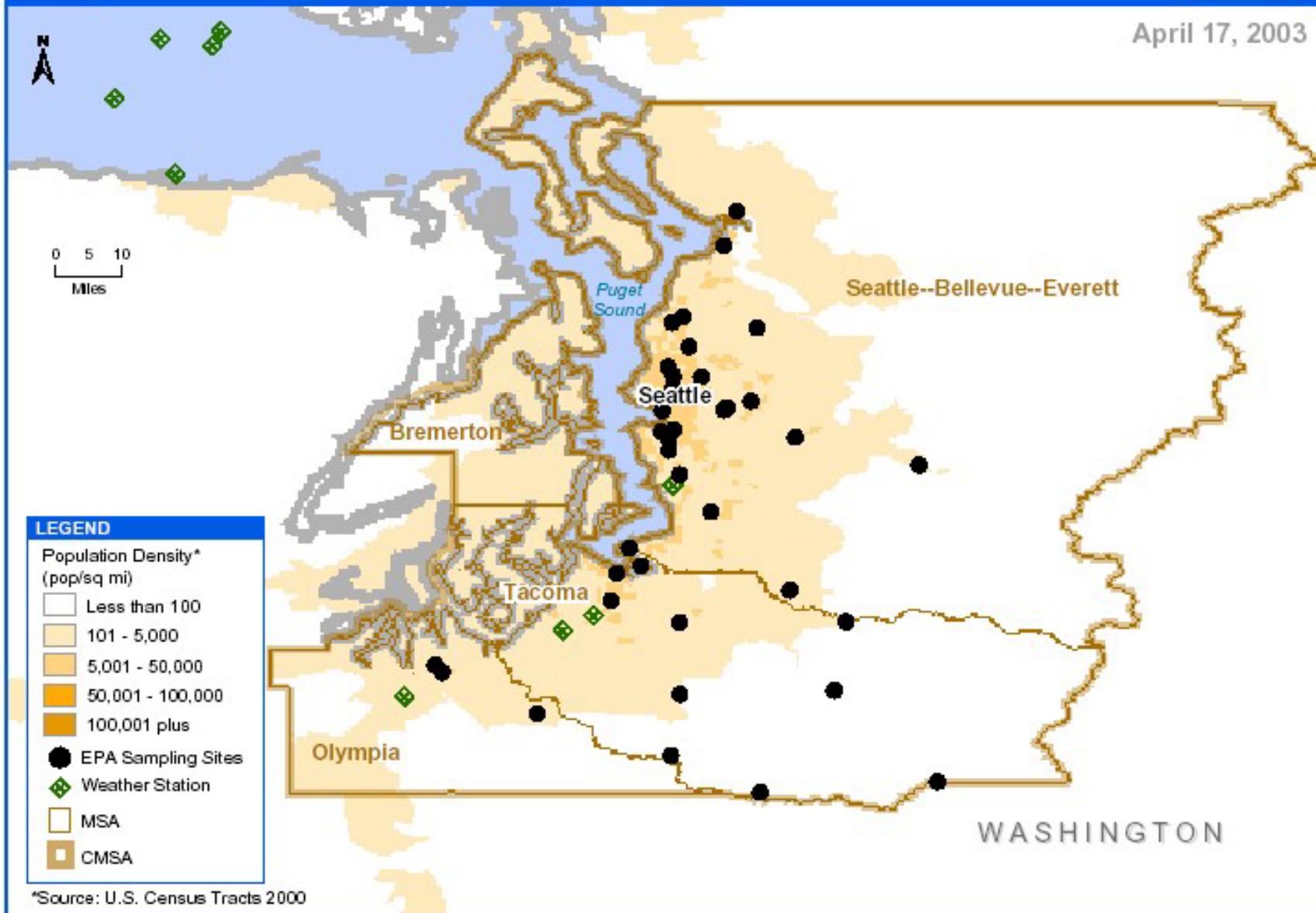


BioWatch - Public Health Response

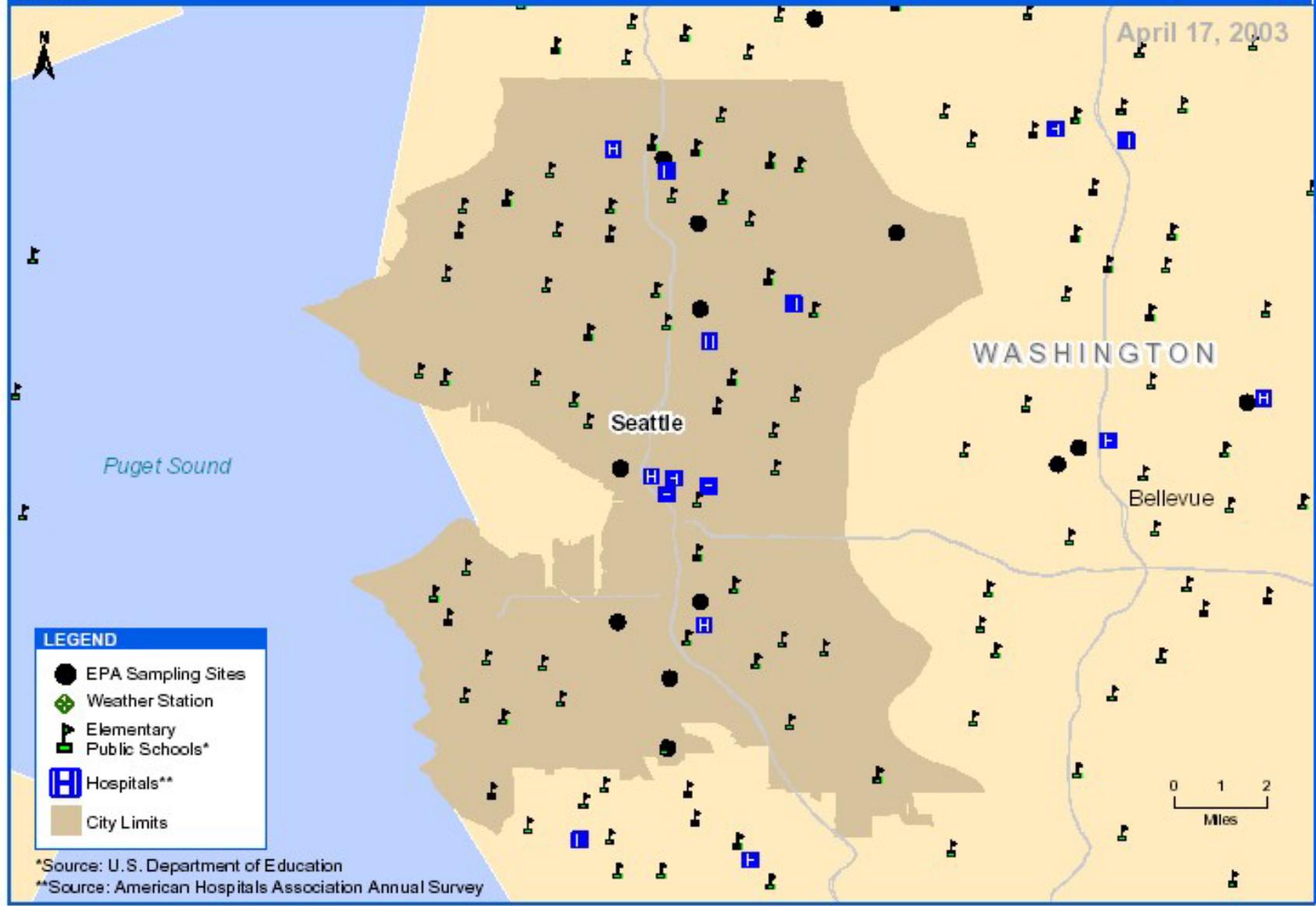
- Premium on rapid integration of information
 - Laboratory results
 - Public health surveillance
 - Law enforcement and intelligence information
- Enhance surveillance to identify first cases promptly if they occur - ? Syndromic Surveillance
- Facilitated analysis, e.g., GIS



April 17, 2003



April 17, 2003



LEGEND

- EPA Sampling Sites
- ◆ Weather Station
- 🚩 Elementary Public Schools*
- 🏥 Hospitals**
- City Limits

*Source: U. S. Department of Education
**Source: American Hospitals Association Annual Survey

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LEGEND

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- ◆ Weather Station
- MSA
- CMSA

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Public Health Information Network Functions

- **Detection and monitoring**
- **Analysis**
- **Information resources and knowledge management**
- **Alerting and communications**
- **Response**

