

APPLICATIONS

- **2000 Emergency Response Guidebook - guidance for first responders**
- **Automated Resource for Chemical Hazard Incident Evaluation (ARCHIE) - risk analysis tool to support emergency preparedness and response planners**

Nature of Accidental Releases

- **Problem has three parts**
 - **Determining the source emission rate**
 - **Estimating downwind dispersion**
 - **Combining health criteria with downwind concentration predictions to obtain hazard distances**

Atmospheric Dispersion

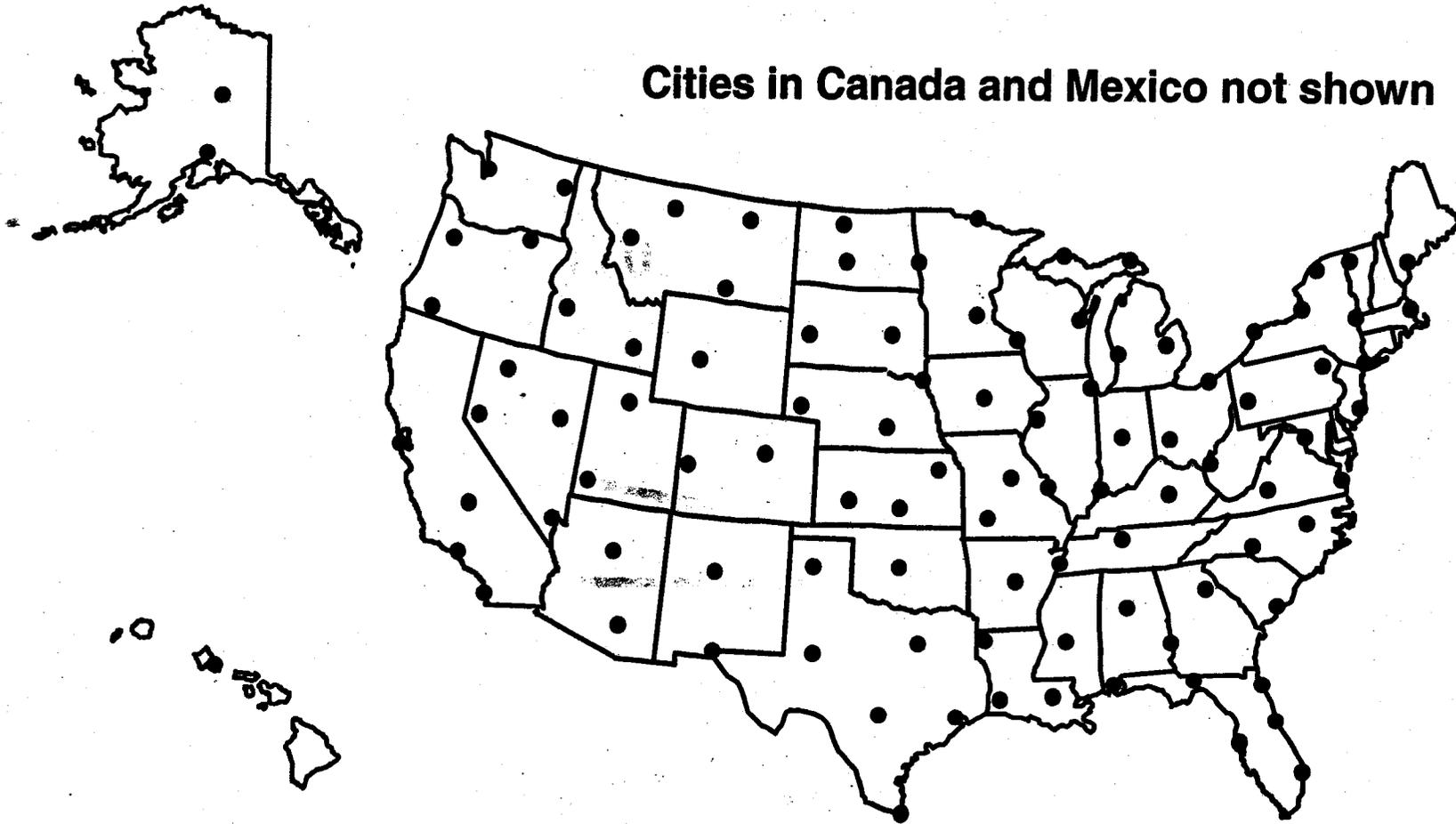
- **Governs downwind concentration**
- **Depends heavily on time of day and prevailing meteorology**
 - **bright sunny day => best dispersion**
 - **overcast day or night => intermediate dispersion**
 - **clear night => worst dispersion**
- **Plume inhomogeneous in both space and time**

Improvements for 2000 ERG

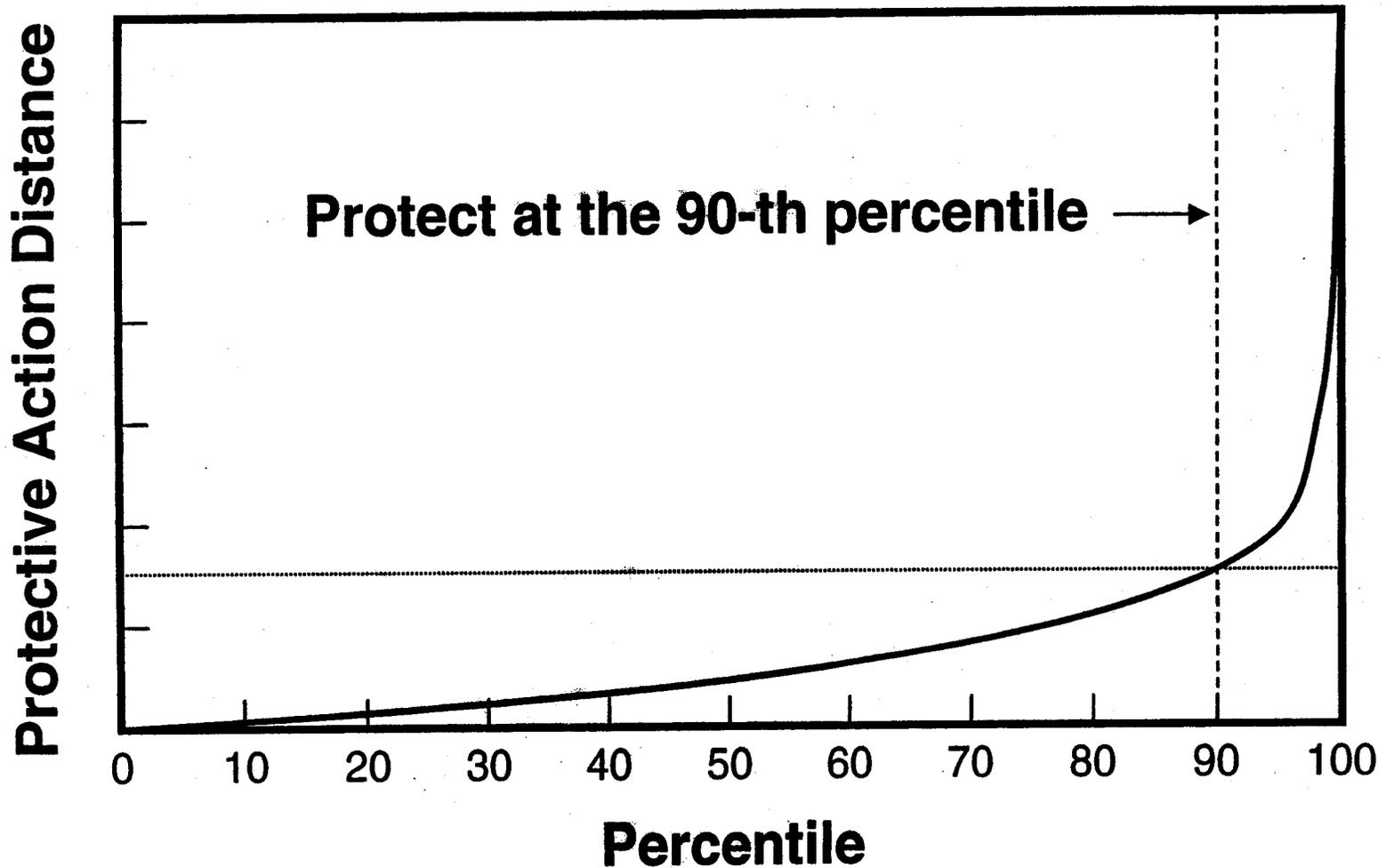
- **Day/night separation**
- **Dispersion based on climatology of 100 cities in North America**
- **Fully ^{sti}statical analysis**
 - **Develop statistical distributions**
 - **Model large number of events**
 - **Level of protection = probability that individual will not experience specified adverse health effect.**

Dispersion Distributions based on 110 Cities

Cities in Canada and Mexico not shown



Emergency Response Guidebook



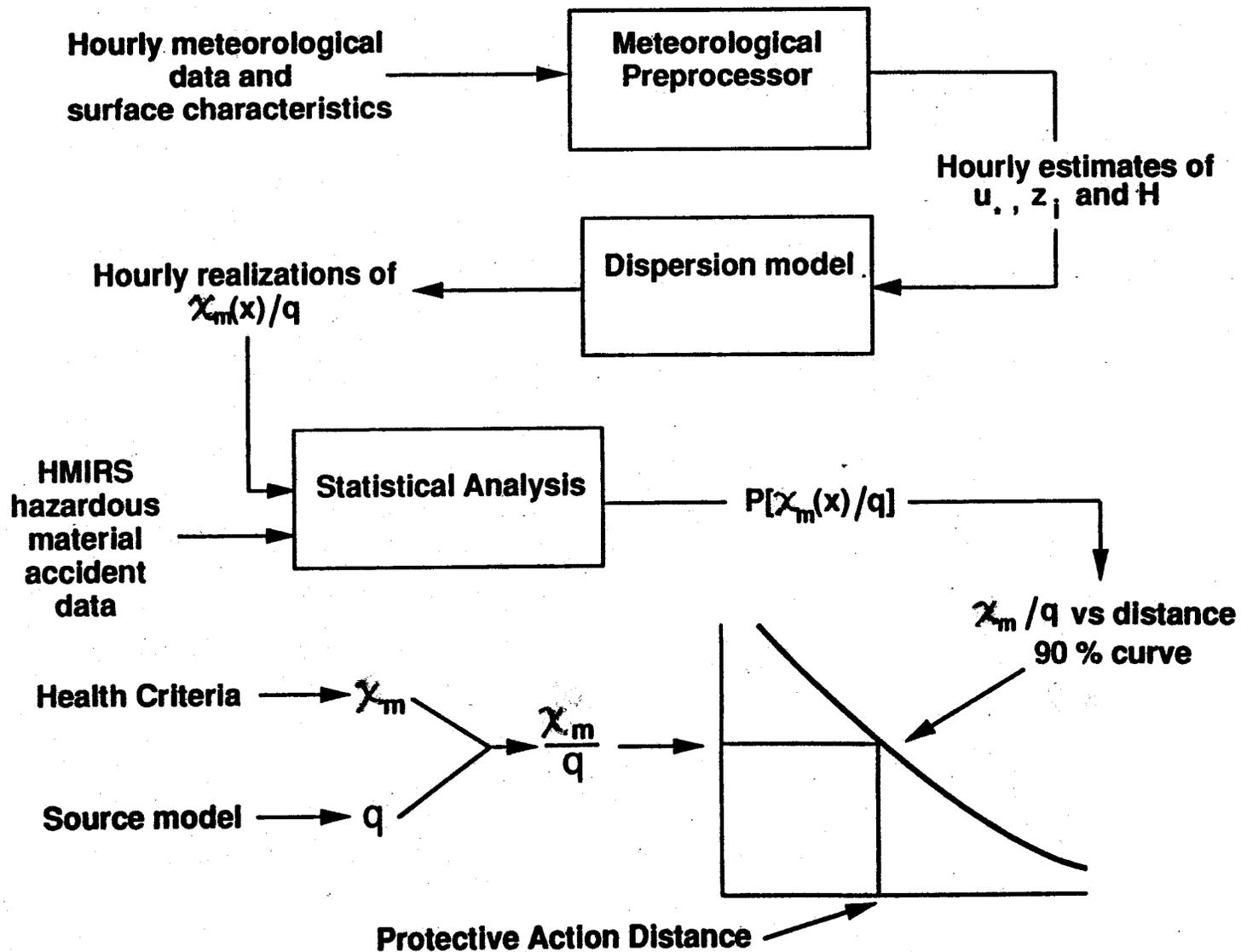


Figure 4.1 Schematic showing analysis procedures discussed in this chapter and their relation to the overall effort in determining Protective Action Distances. This chapter is concerned with determination of the χ_m/q curve. Health criteria and source emission rates are discussed in Chapters 2 and 3, respectively.

AUTOMATED RESOURCE FOR CHEMICAL HAZARD INCIDENT EVALUATION (ARCHIE)

Objective

- **Provide set of hazard and consequence analysis tools applicable to hazardous materials**

Applications

- **Help emergency planners and responders design for emergency planning, and plan and manage risk**
- **Provide an opportunity to pro-actively manage risks**
- **Help lay out accident prevention plans, emergency response plans**

- **Provide communication of risks based on**
 - ☞ **Category of release**
 - ☞ **Types of hazards (explosion, fire, toxicity)**
- **Help determine compliance with regulatory requirements**
- **Provide capability for plotting hazard zones and plumes on geographical maps**
- **Provide information to understand what and where the high risk factors are and how they can be managed**
- **Can access to a data base to which a new value can be entered if user wants**
- **Promote openness between the community and industry**
- **Help develop plans to manage risks**

Target Audience

- **Fire and Public Health Department staff**
- **Police and Sheriff Department staff**
- **LEPC members and other public officials**
- **Staff of industrial concerns**
- **Consultants in the field**
- **Concerned members of the public and public interest groups**
- **Students being trained in the field of hazard analysis**

Changes to be Made for the New Version

● User Interface

- ☞ Interface with Windows Operating Environment - windows 95, 98, and NT4.0 (Compared to present DOS Menus)**
- ☞ Install from CD-ROM with Autorun feature**
- ☞ Pull-down menus and options**
- ☞ Two primary menus linking the interfaces of the old and new programs and ensuring intuitive use on the part of old ARCHIE users**

● Ease of Use Enhancement

- ☞ Add mapping capabilities to view hazard zones**
- ☞ Add GIS capabilities (No street maps except for a demo sample)**
- ☞ Add automatic conversion of units**
- ☞ Show tabular results along with maps and graphs**
- ☞ Options will feature**
 - Appropriate levels of damage and injury**

- **Default units**
- **Default input parameters**
- **Chemical properties**
- **Default meteorological properties**
- **Screen display characteristics**

- **Chemical Properties Database**

- ☞ **Incorporate the complete database for several hundred chemicals**

- **Source Term Model**

- ☞ **Make revision to the existing source term models if needed**

- **Dispersion Model**

- ☞ **Incorporate enhanced vapor dispersion models.**

- **On-line help**

- **Getting Started Guide for Users**

- **Provide capability for plotting hazard zones and plumes on geographical maps**
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