

***Commission Briefing
REACTOR EMERGENCY
PLANNING***



***Office of Nuclear Reactor
Regulation***

Emergency Planning

A SUCCESS

**Ongoing coordination, planning,
practice, and refinement of
emergency plans contribute to
successful EP**



Emergency planning

Develops workable plans

Confirms that plans work

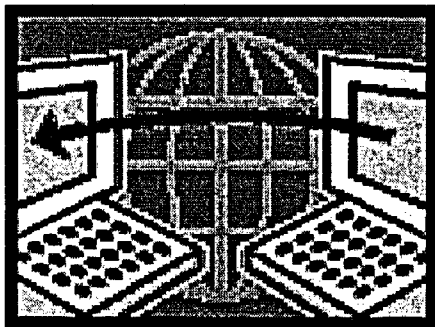
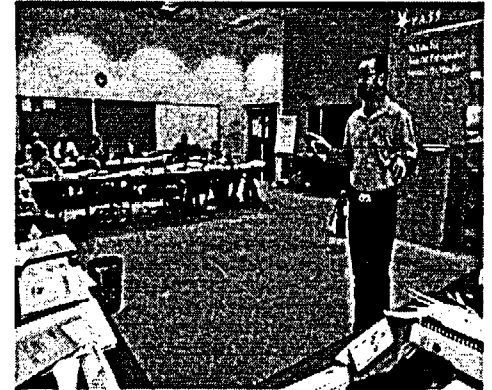
**Can identify, evaluate and react to a wide
spectrum of emergency conditions**

Emergency Preparedness

In the news.....

Lessons learned contributed to a robust EP infrastructure:

- ▶ Emergency planning/procedures
- ▶ Training
- ▶ Offsite response
- ▶ Drills/exercises
- ▶ Communications with public, media, offsite officials



Emergency planning is a part of NRC's "defense-in-depth" philosophy

Safety

requires high quality in the design, construction and operation of nuclear plants

requires safety systems to reduce the chances that malfunctions will lead to accidents

requires containment structures and other safety features to prevent the release of fission products offsite

Security

Emergency Planning

Regulatory Standard

Reasonable Assurance that adequate protective measures can and will be taken to protect public health and safety.

Emergency Preparedness

**Actions which can and should be performed
prior to an emergency**

Planning and coordination meetings

Procedure development/implementation

Training

Drills and exercises

Evaluations, critiques, continuous improvements

Lessons learned

Pre-positioning/maintenance of emergency equipment



Emergency Response

- Actions taken in *response* to an actual event.



Successful planning

Successful response.

EP CRITERIA for Power Reactors

10 CFR 50.33

10 CFR 50.34 10 CFR 50.47

10 CFR 50.54 10 CFR 50.72

Appendix E to Part 50.

NUREG-0654/FEMA-REP-1, Rev. 1,

16 Planning Standards

- Assignment of responsibilities
- Onsite Emergency Organization
- Emergency Response Support and Resources
- Emergency Classification System
- Notification Methods and Procedures
- Emergency Communications
- Public Education and Information
- Emergency Facilities and Equipment
- Accident Assessment

16 Planning Standards, cont'd

- Protective Actions
- Radiological Exposure Control for emergency workers
 - Medical Support for Contaminated Injured Individuals
 - Recovery and Reentry Planning, Post-Accident Operations
 - Exercises and Drills
 - Radiological Emergency Response Training
- Responsibility for Planning Effort: Development, Periodic Review, Distribution, Updates

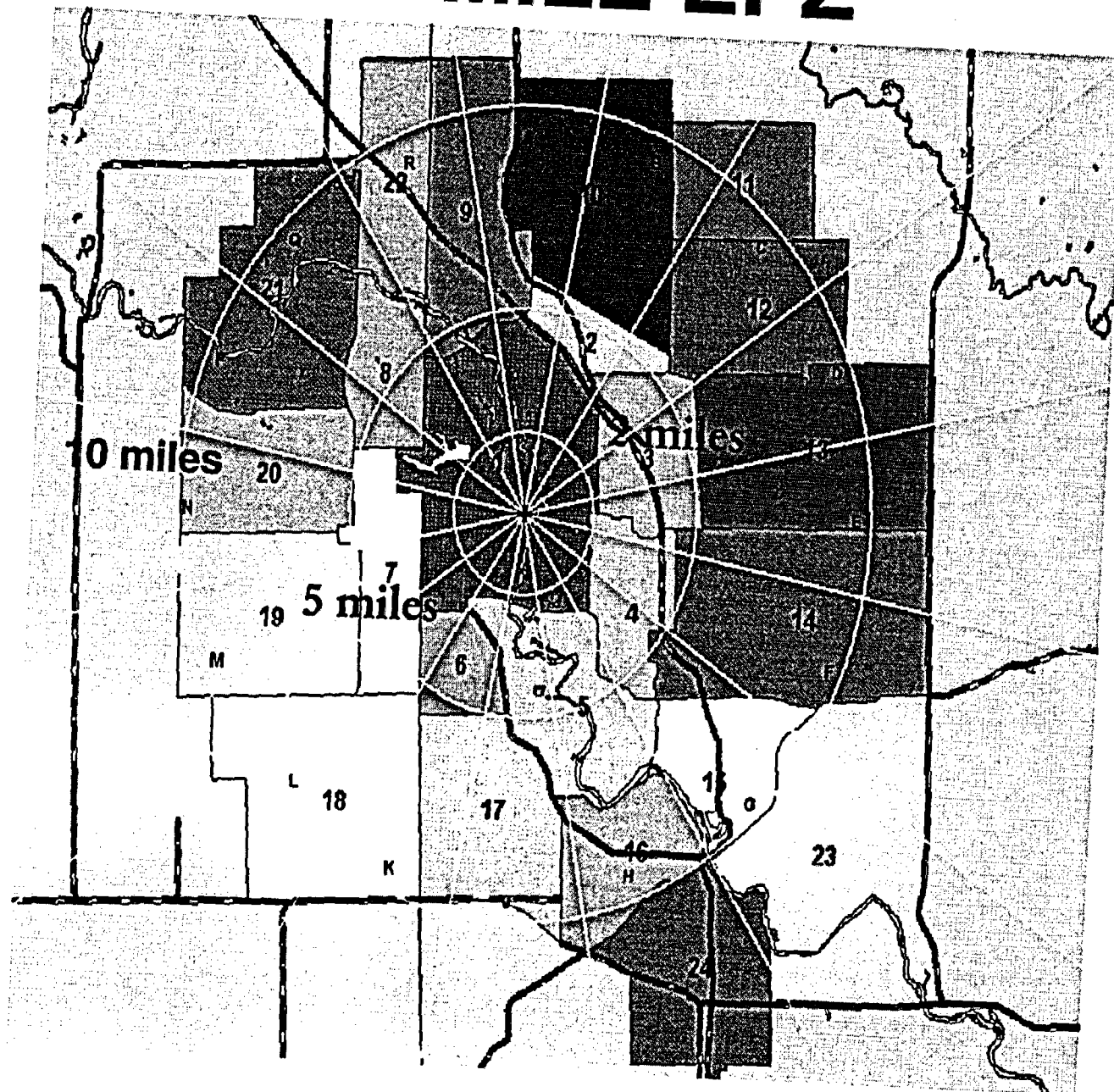
Emergency Planning Zone

A defined area around a nuclear power plant

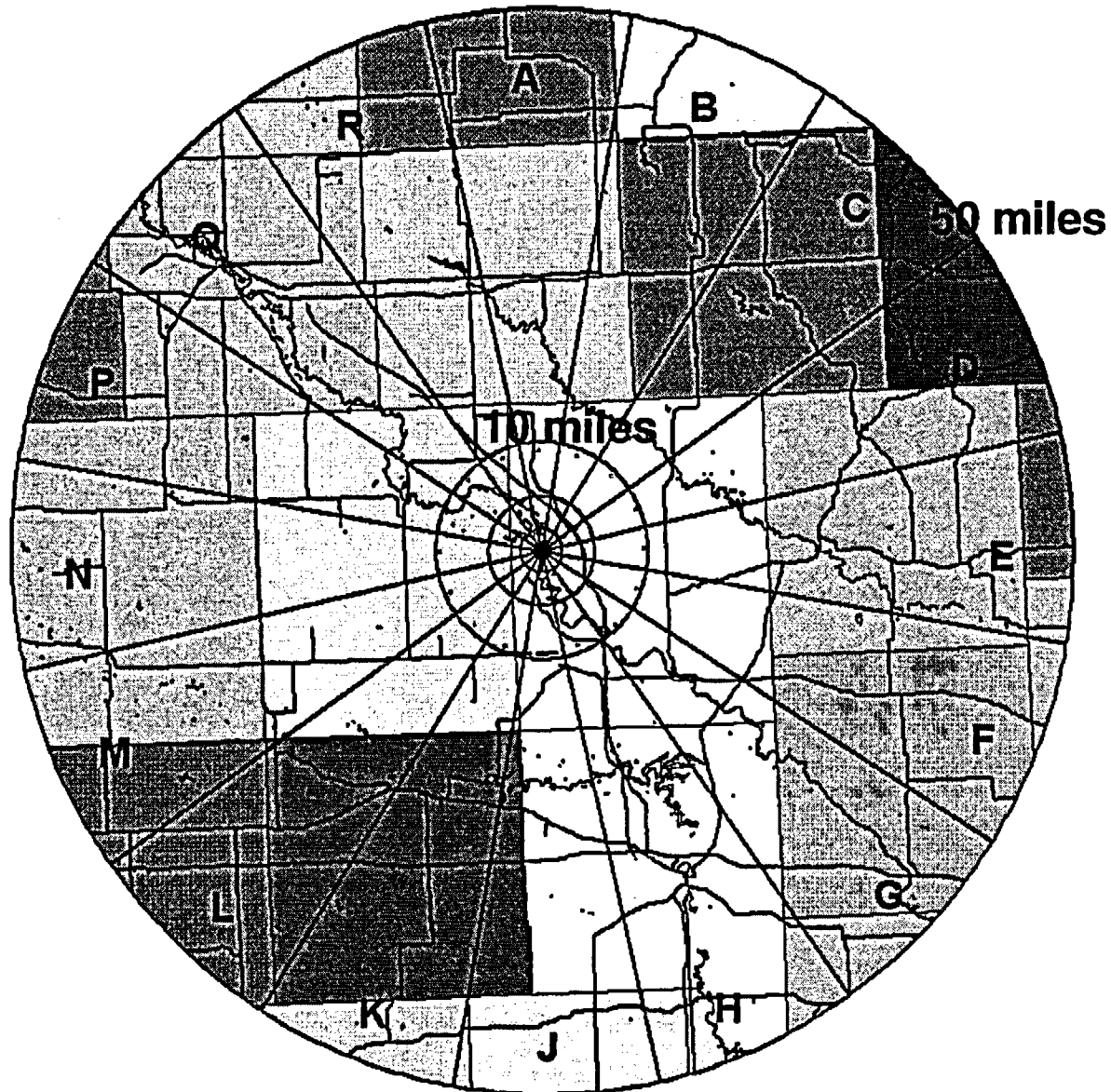
Facilitates offsite emergency planning

Supports response beyond the planning zone

10 MILE EPZ



50 MILE EPZ



Protective Actions

Risk of the protective action
and

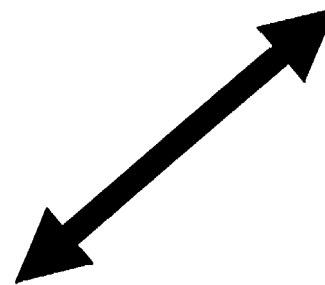
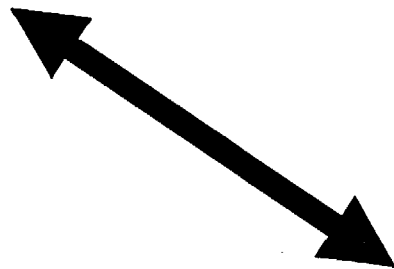
Risk associated with the dose that will be avoided

Protective actions

10 mile EPZ

Shelter

Evacuate



KI

Protective Actions

50 mile EPZ

Interdiction of contaminated food and milk

Relocation of population

Access control

Food animals on stored feed, not pasture

Sandia Laboratory Report 1982

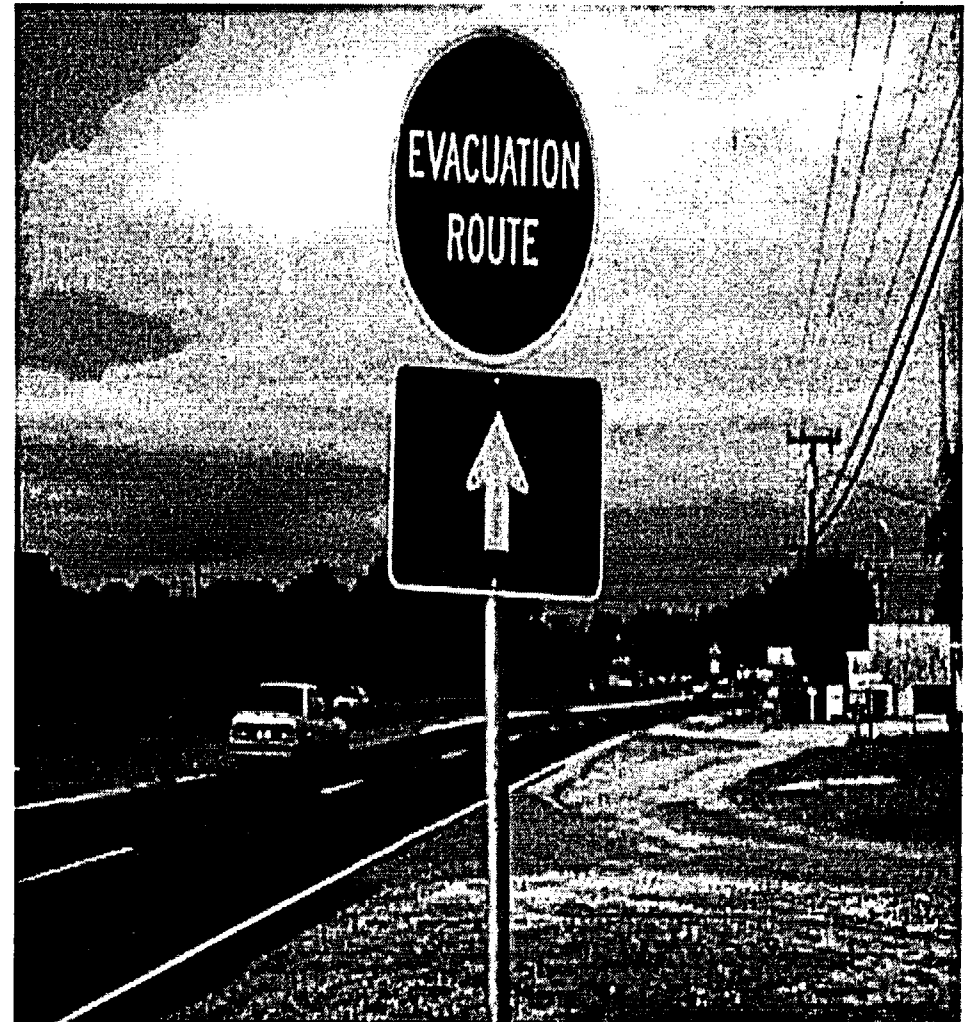
Results often taken out of context

Unrealistic assumptions

Never intended to be a basis for emergency
planning

Evacuation

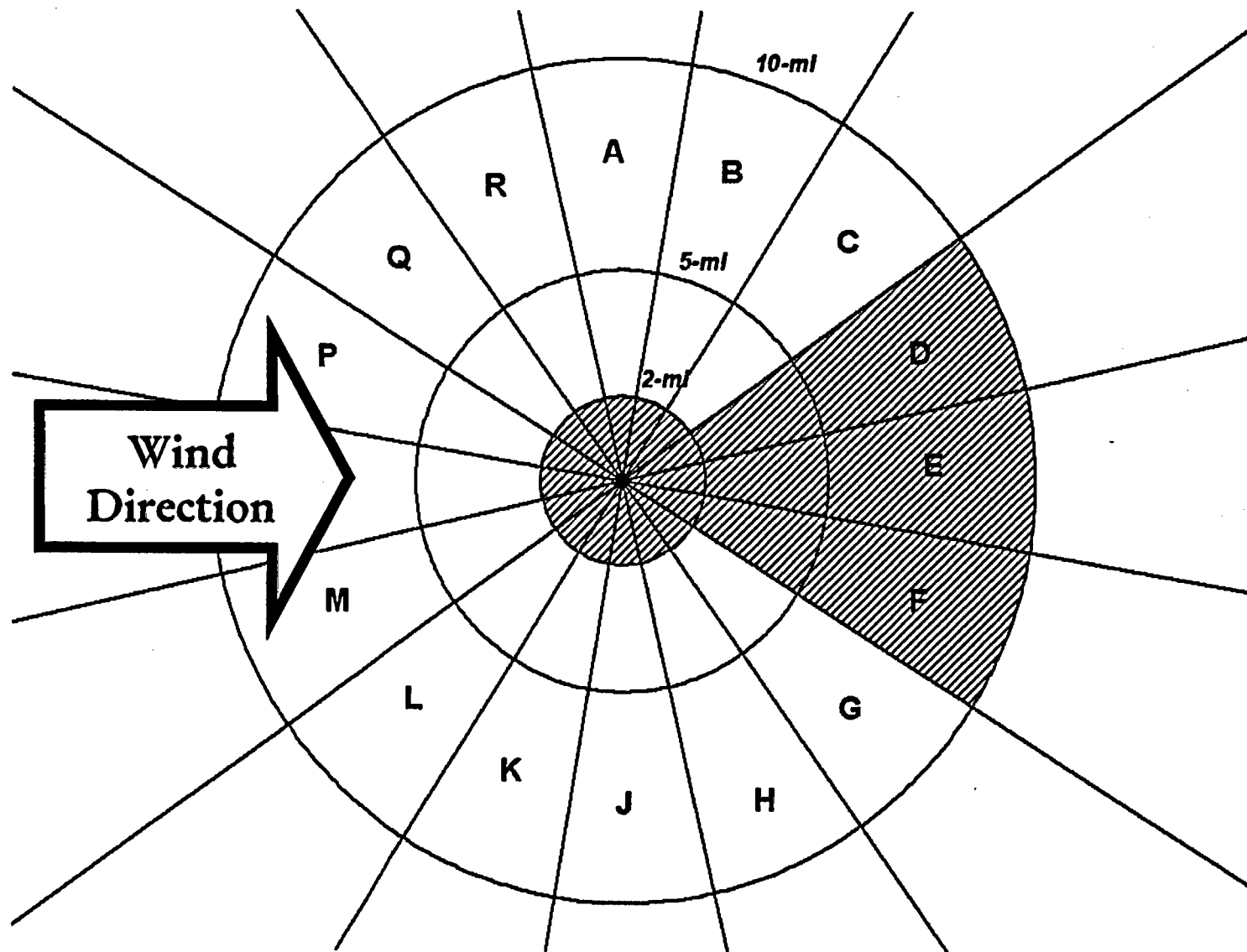
- Evacuation directs people away from the plume
- Reduces/eliminates radiological exposure



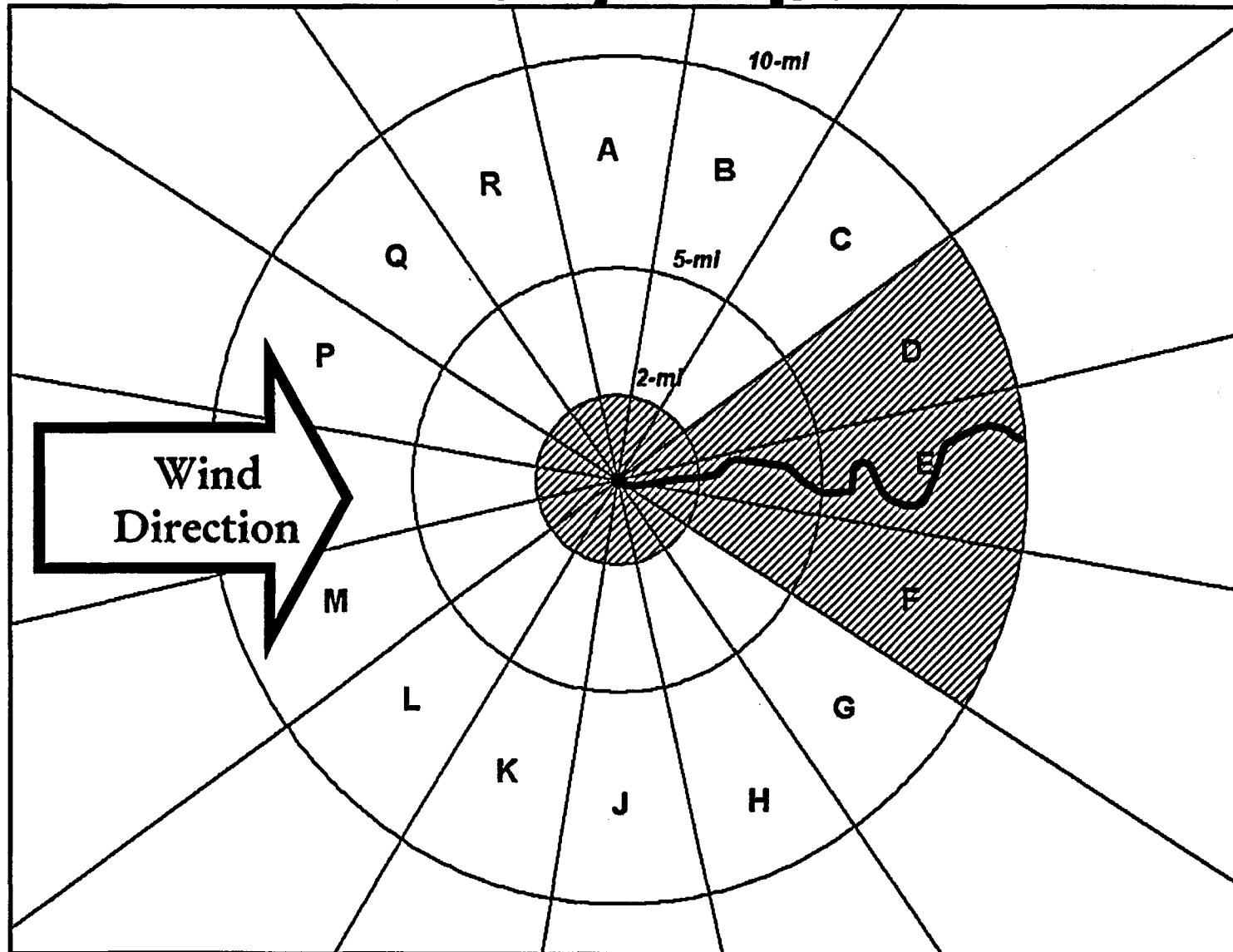
Shelter



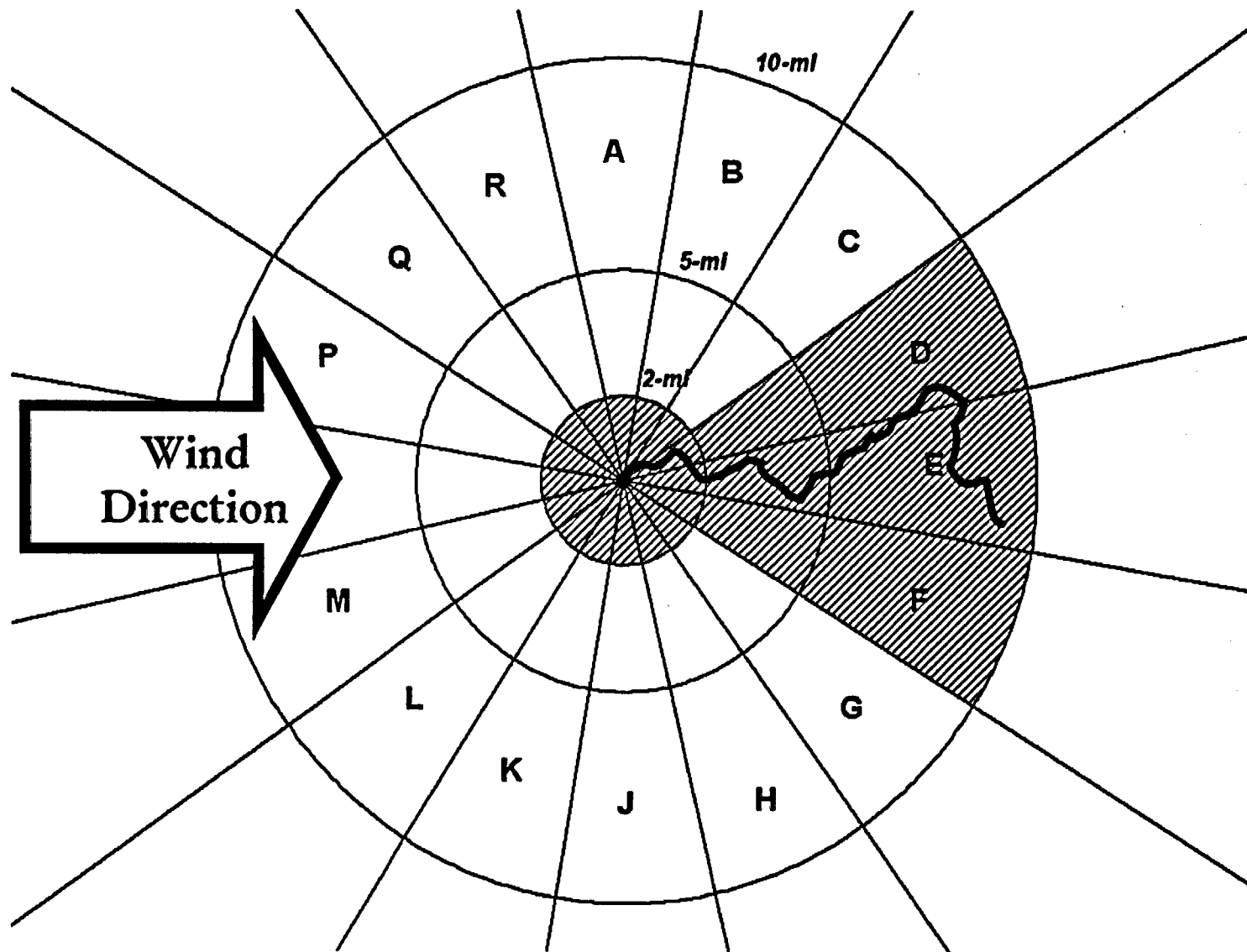
“Keyhole”



Plume meander “straight” path



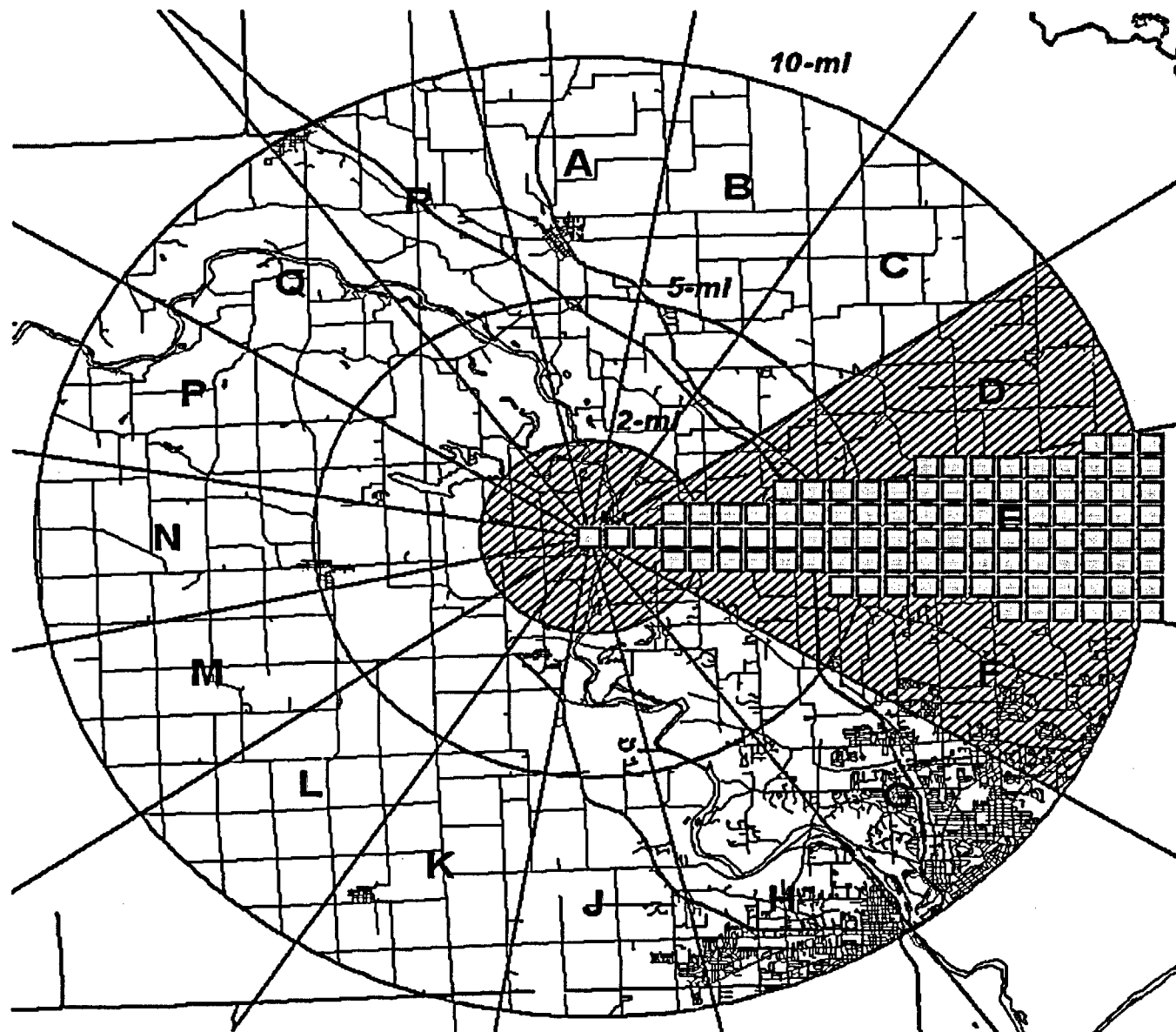
Plume meandering



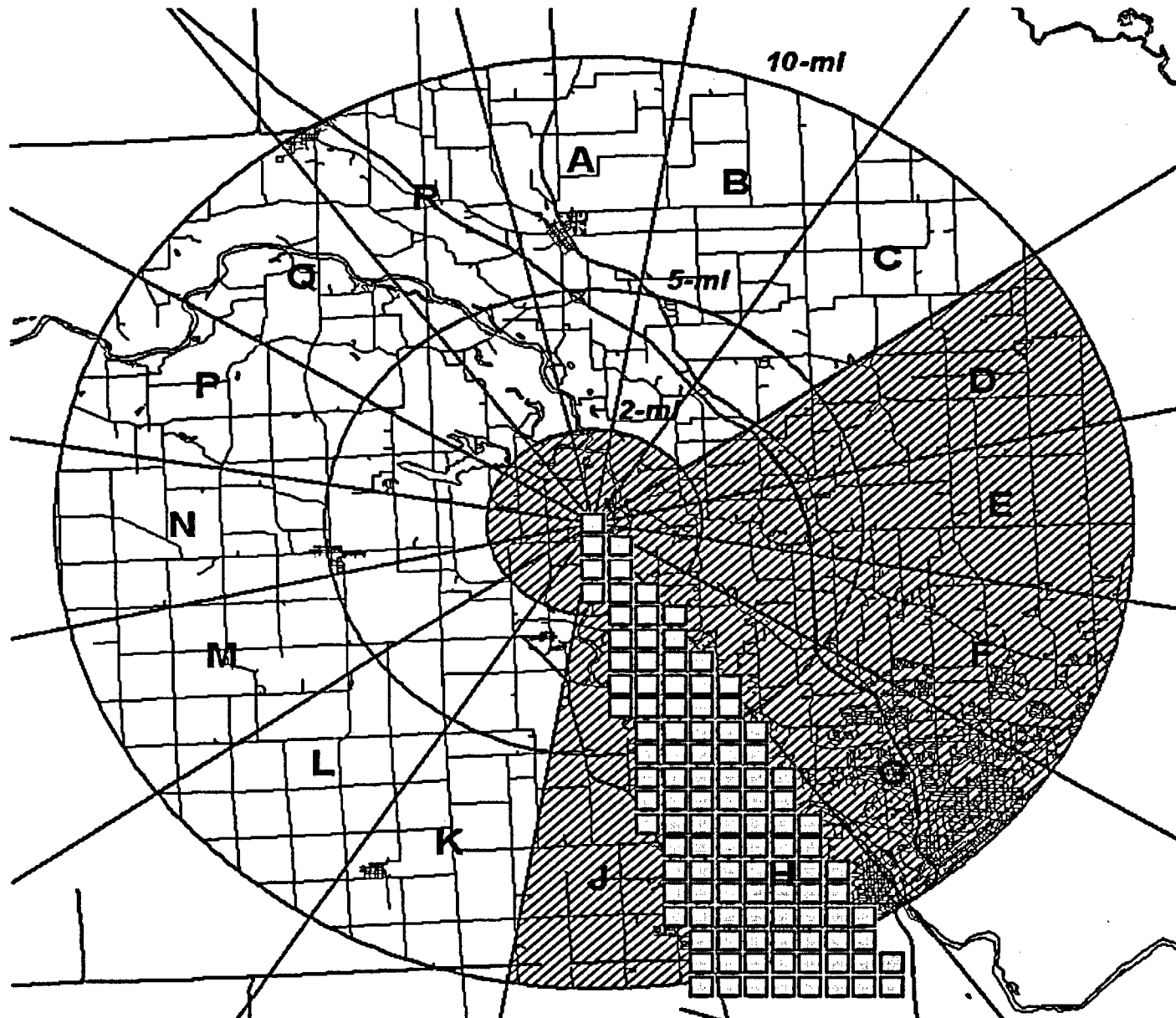
EVACUATION TIME ESTIMATE

- Assist decision makers in protective action strategies
- Assist authorities in traffic management
- Updated as demographics change
- Not linked to dose

Initial Plume

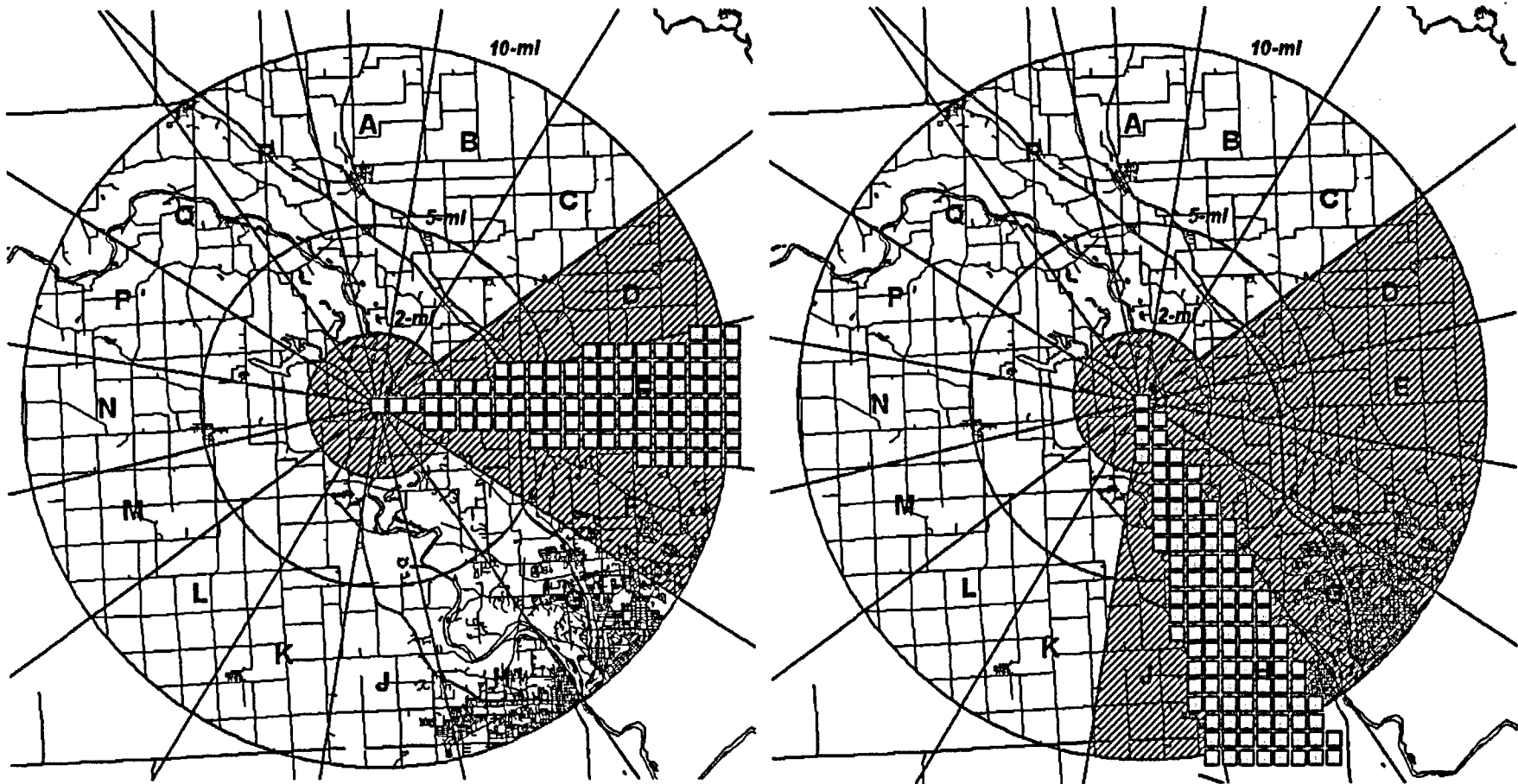


Windshift, keyhole expanded



Expanded keyhole

as wind shifts, protective action range expanded



Emergency Plans

Nuclear plant emergency plans have been implemented successfully in real-life non-nuclear situations:

- Cedar Rapids, IA, 10,000 people evacuated from toxic fumes from a fire
- St. Charles Parrish, LA, 17,000 people evacuated from leak at chemical plant
- Nanticoke, PA, 13,000 people evacuated from toxic smoke
- San Luis Obispo, CA, 3000 people evacuated from out-of-control fire

10 CFR 50.47(b)(10)

“in developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide”

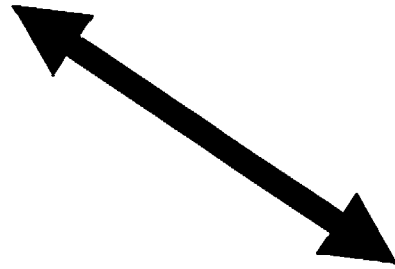
Potassium Iodide

**18 states have received KI tablets from the
NRC**

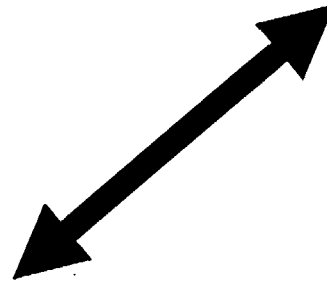
10,100,000 KI tablets have been distributed

Shelter

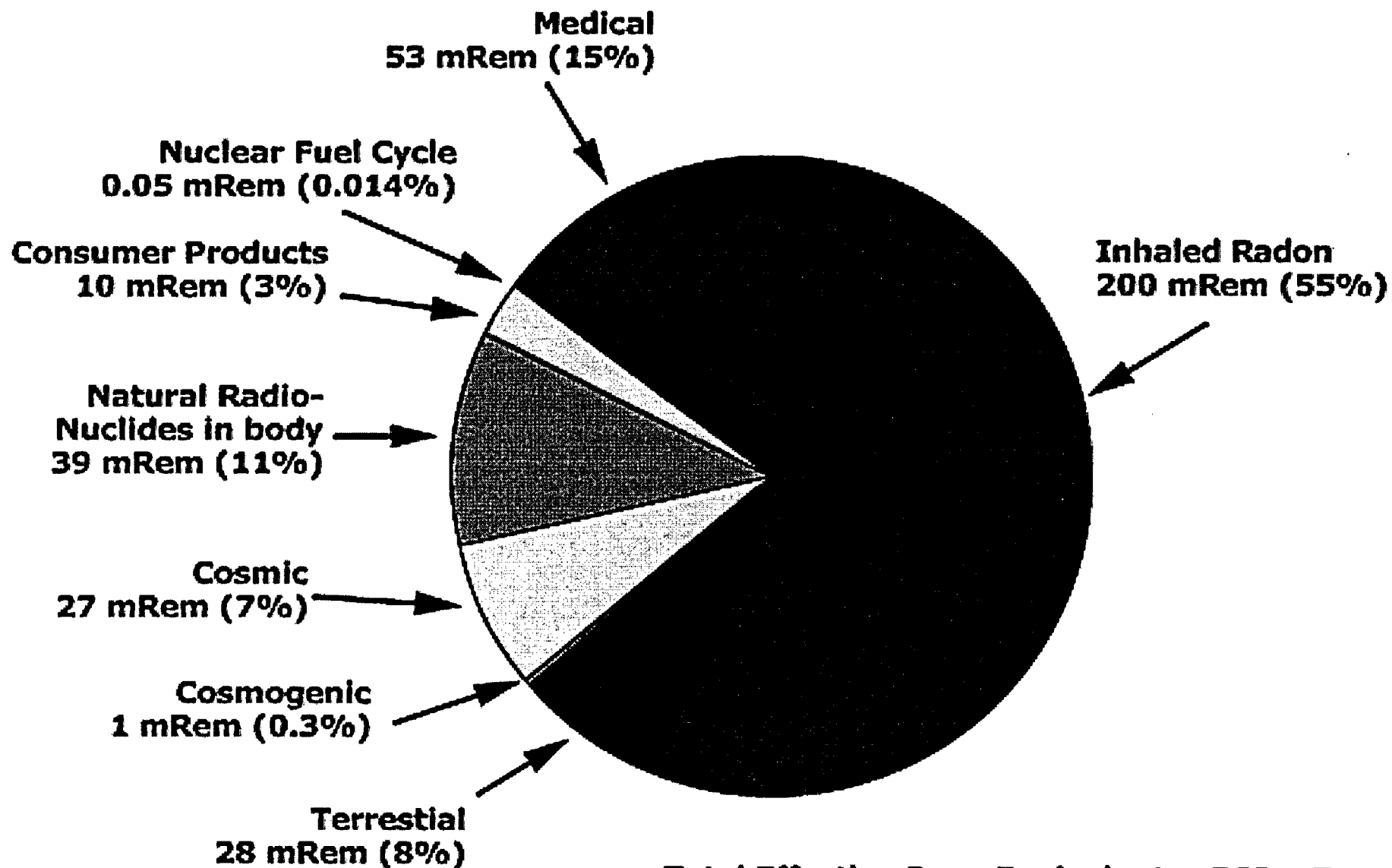
Evacuate



KI



Sources of Exposure



Total Effective Dose Equivalent = 360 mRem

Emergency Planning in the New Threat Environment

**Emergency Plans are not dependent on
the initiating scenario**

**Emergency Planning basis remains valid
in the post-9/11 threat environment**

Emergency preparedness regulations **require** rapid notification of the public in the event of an emergency.

NRC & FEMA

Relationship is codified in regulations and in Memoranda of Understanding

FEMA/NRC steering committee, Regional Assistance Committee, Federal Radiological Preparedness Coordinating Committee

RADIOLOGICAL EMERGENCY PREPAREDNESS PROGRAM

**Ensure health and safety of citizens living around
commercial nuclear power plants**

**Inform and educate the public about radiological
emergency preparedness**

REP PROGRAM MISSION

Enhance planning, preparedness, and response for all types of radiological emergencies with Federal, State, Tribal and local governments and the private sector

Ensure adequate offsite emergency plans and preparedness are in place and can be implemented to protect public health and safety

FEMA RESPONSIBILITIES

- Evaluate offsite emergency response plans
- Evaluate biennial exercises
- Make findings on adequacy of planning
- Provide regulatory oversight and guidance
- Respond to requests for assistance
- Coordinate Federal planning activities

EXERCISE FINDINGS

Deficiency – a performance inadequacy that could cause a finding that offsite emergency preparedness does not provide reasonable assurance public health and safety can be protected

Area Requiring Corrective Action – a performance inadequacy that does not adversely impact public health and safety

ANNUAL LETTER OF CERTIFICATION

- Voluntary reporting mechanism
- Submitted by January 31st each year
- Summary of annual preparedness activities
- Not a certification of reasonable assurance from State or local officials

ALERT AND NOTIFICATION SYSTEMS

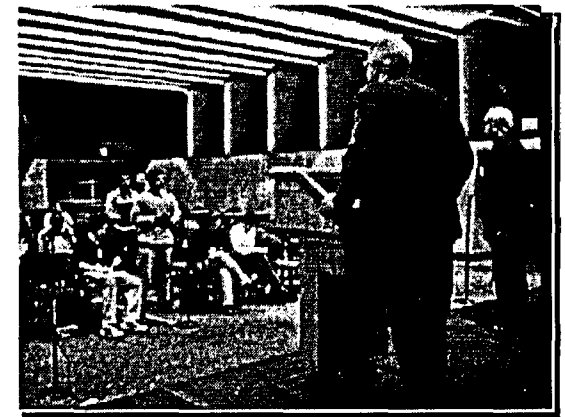
- Physical means of notifying public within 10-mile emergency planning zone
- Most often outdoor siren systems
- Planned back up notification methods
- Reviews conducted upon significant modifications to system

REP PROGRAM SUCCESS

- Wide recognition as a successful program
- Success a result of
 - Interagency Coordination
 - Communication
 - Management Support
- Continued success fully expected

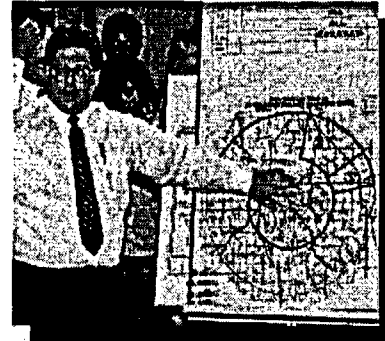
Emergency Response NRC's Responsibilities

Assess plant conditions
Evaluate Protective Action
Recommendations
Support off-site officials
Keep other agencies informed
Keep news media informed

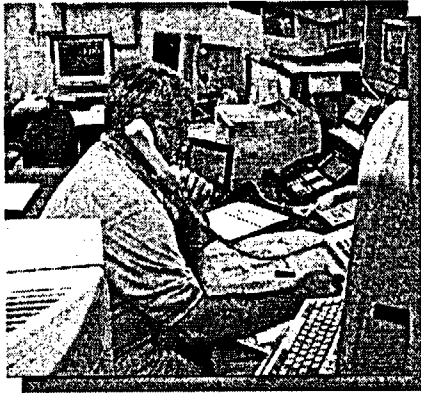


Coordination With Other Agencies

- Department of Homeland Security • Department of Defense
- Federal Aviation Administration • Department of Energy
- Environmental Protection Agency • Department of Justice
- Federal Emergency Management Agency • States • Locals



NRC's Response Organization



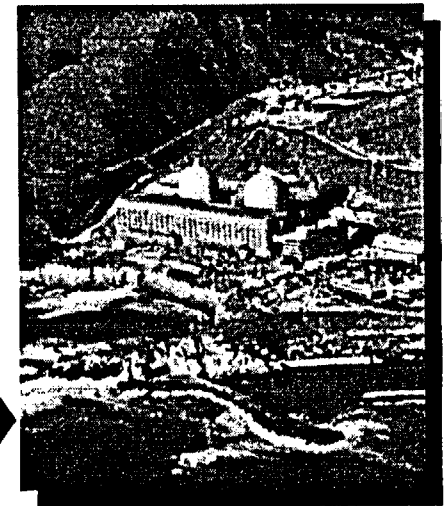
← HQ Operations
Officer (HOO)

Executive Team →

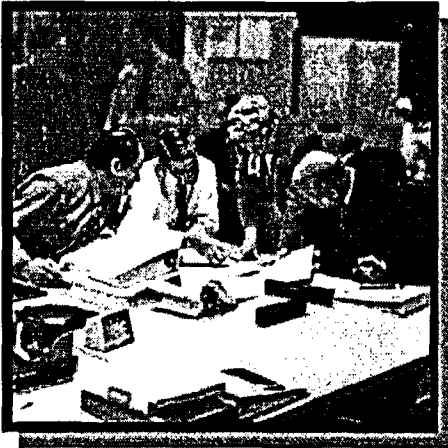


← HQ and Regional
Assessment Teams

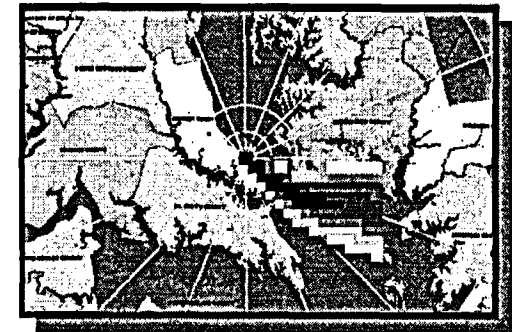
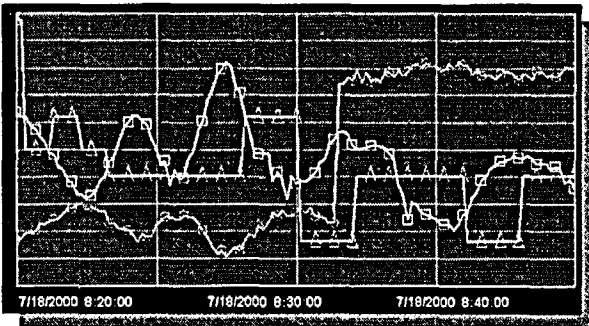
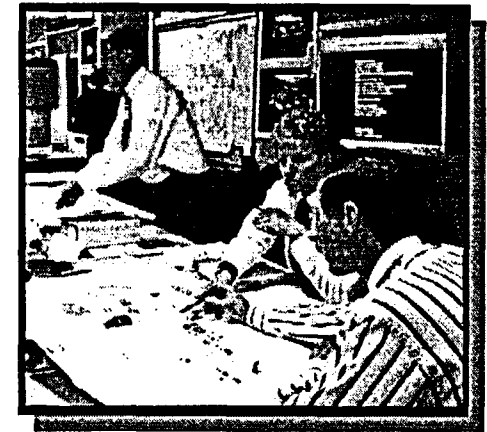
Site Team →



Assessment Teams



- Reactor Safety Team
- Fuel Cycle Safety Team
- Safeguards Team
- Protective Measures Team



Recent Activities

TOPOFF 2 Interagency Exercise
Coordination with DHS on National
Response Plan



Coordination with DOD on Interagency
Exercise Planning

Unified Defense 04

Amalgam Virgo 04

Continuing activities to Headquarters
Operations Center and Regional Response
Centers

**The Nuclear Regulatory Commission's
effective and robust emergency planning
regulations continue to demonstrate our
strong commitment to the protection of the
public health and safety**