

Development of Diazinon Dormant Spray Runoff Management Monitoring Program

SRWP OP Focus Group Discussion
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SRWP Entering into a Diazinon Dormant Spray Runoff Management Program

- Pilot studies on efficacy of BMPs to reduce/eliminate diazinon runoff from dormant sprayed orchards that causes aquatic life toxicity in State's waters
- Need monitoring program to evaluate effectiveness of diazinon control programs

Three projects; 319(h), CALFED and Prop. 13 funded to explore development of diazinon runoff control programs

- Will initiate three or more site investigations for evaluation of diazinon runoff control from dormant sprayed orchards.
- Need to develop monitoring programs for three projects and the overall "bigger picture" monitoring program
- Other issues

Characteristics of the Proposed Study Sites

- Kelly Briggs and Marshall Lee discuss the funding situation with respect to the BMP evaluation projects
- Mike Oliver and Kelly Briggs discuss the characteristics of the three study sites
- Kelly Briggs discusses what the Regional Board's information needs are from the BMP evaluation
- Marshall Lee discusses DPR's information needs from the BMP evaluation
- Debra Denton discusses US EPA's information needs from the BMP evaluation
- Other issues



MANAGING TROUBLED WATERS

**THE ROLE OF
MARINE
ENVIRONMENTAL
MONITORING**



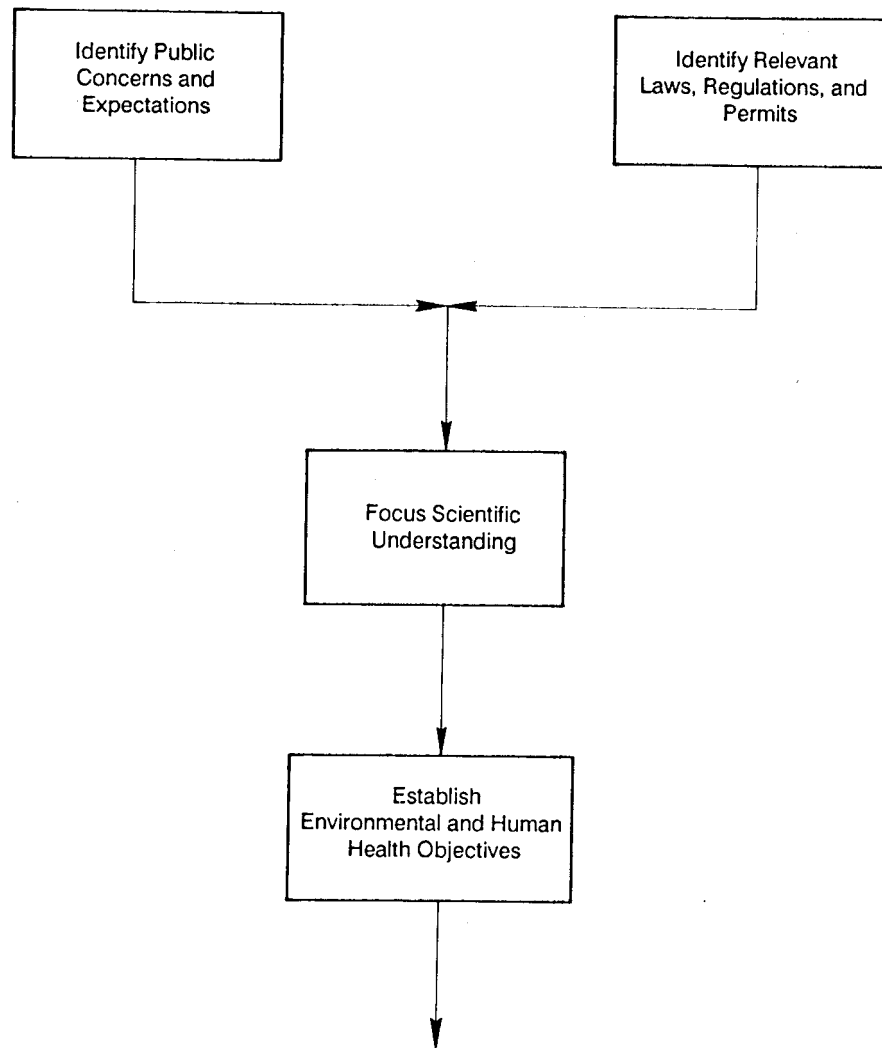


FIGURE 4.2 Step 1: define expectations and goals of monitoring.

Monitoring Issues

- Objective(s) of the monitoring program
 - Clearly define the objectives of the monitoring
 - What is to be determined?
 - How reliably is it to be assessed?

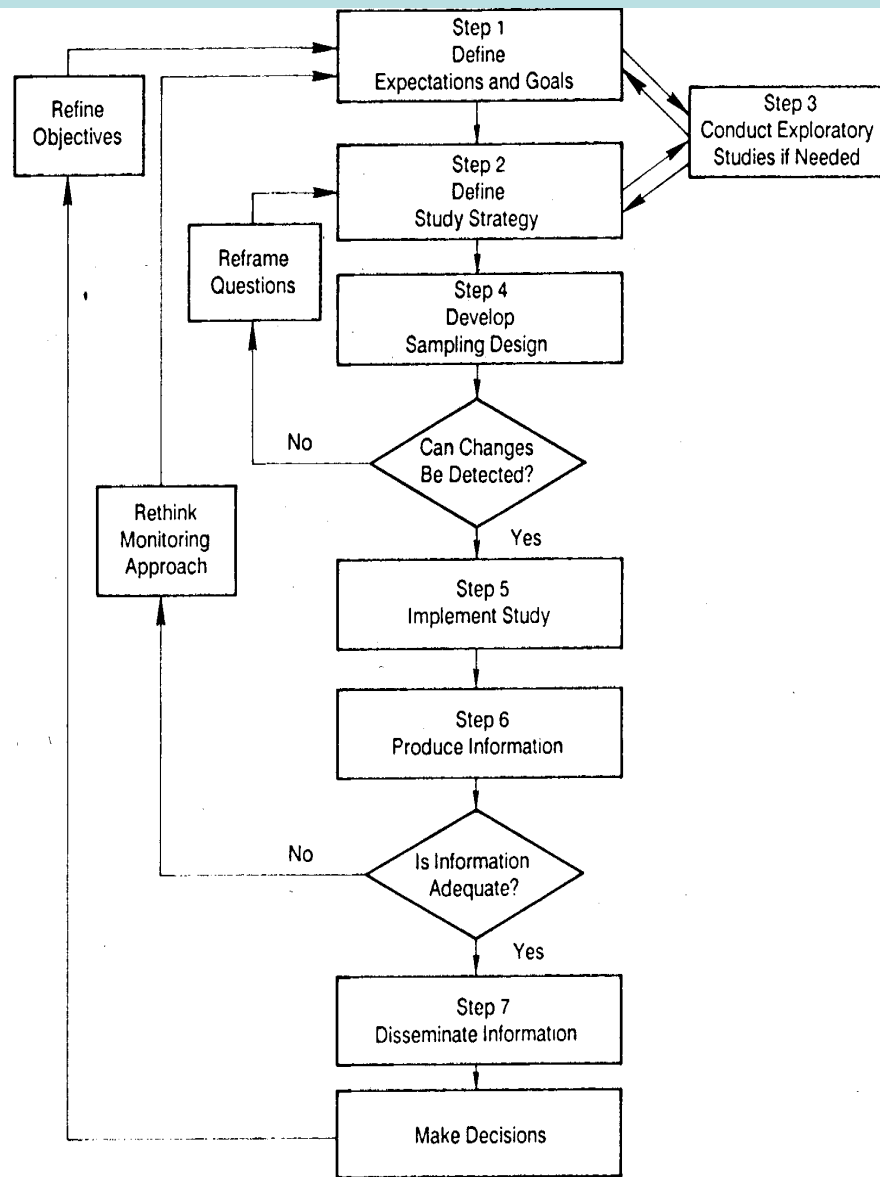


FIGURE 4.1 The elements of designing and implementing a monitoring program.

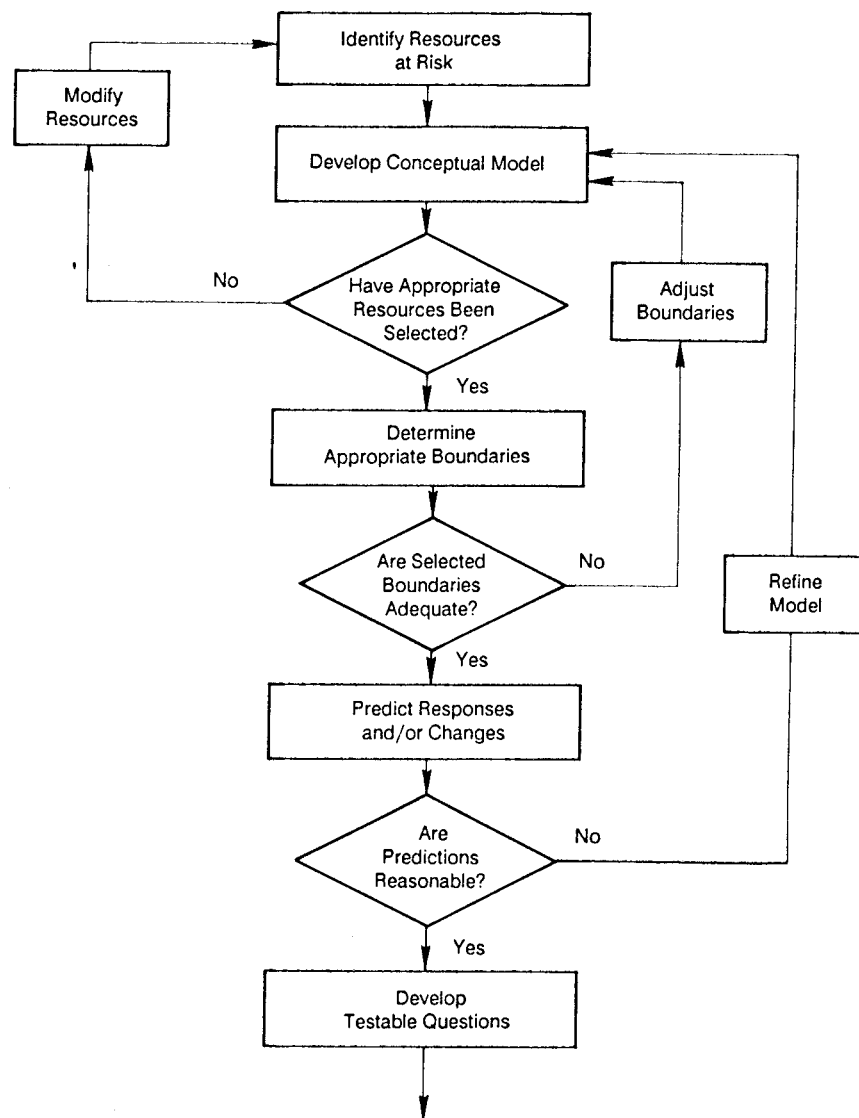


FIGURE 4.4 Step 2: Define study strategy.

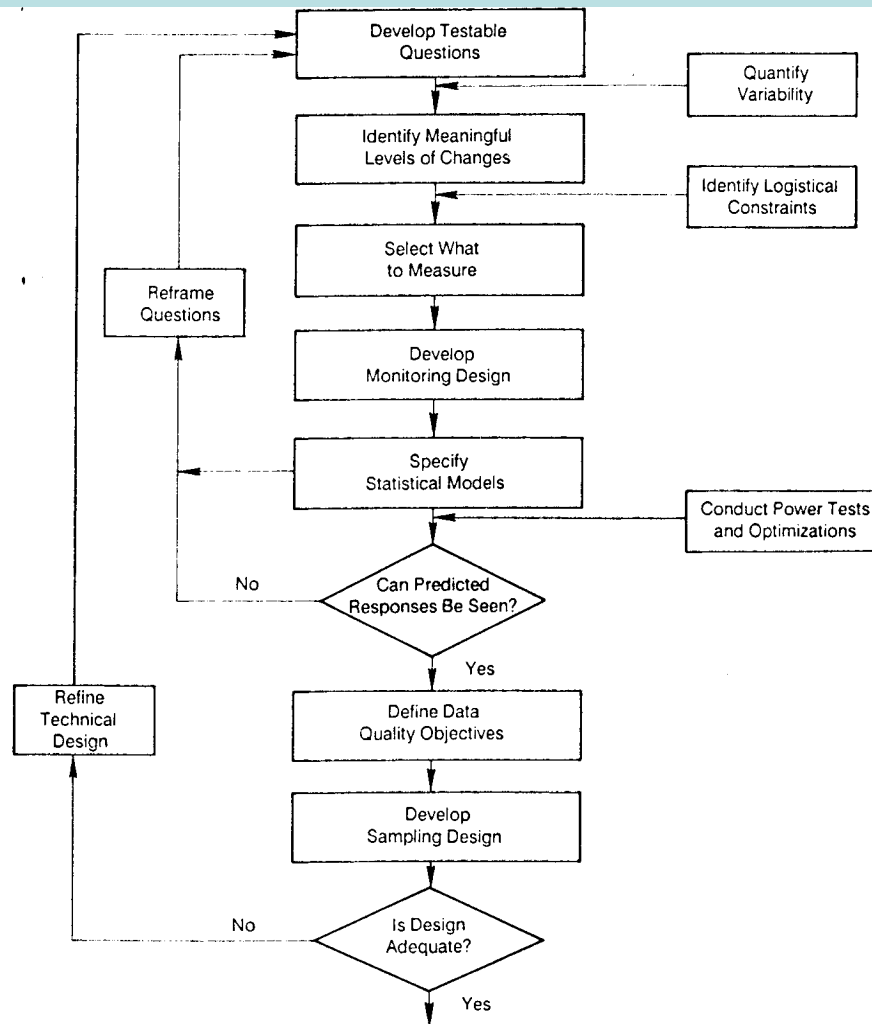
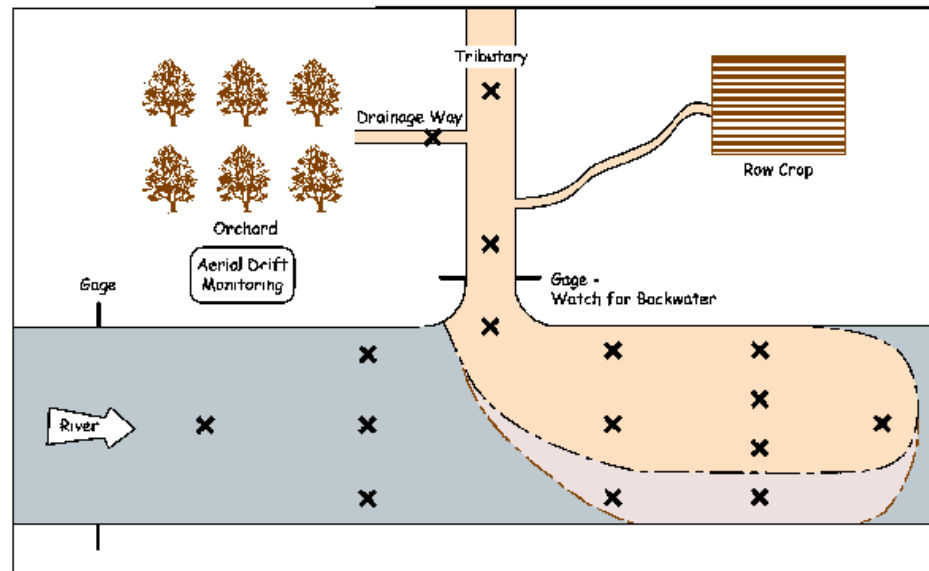


FIGURE 4.6 Step 4: Develop sampling/measurement design.

Typical Monitoring Situation



✕ Water-Column & Benthic Sampling Locations

Use Caged Organisms at Selected Locations

Sample Water Column during Runoff Event
Measure Toxicity & Pesticide Concentrations

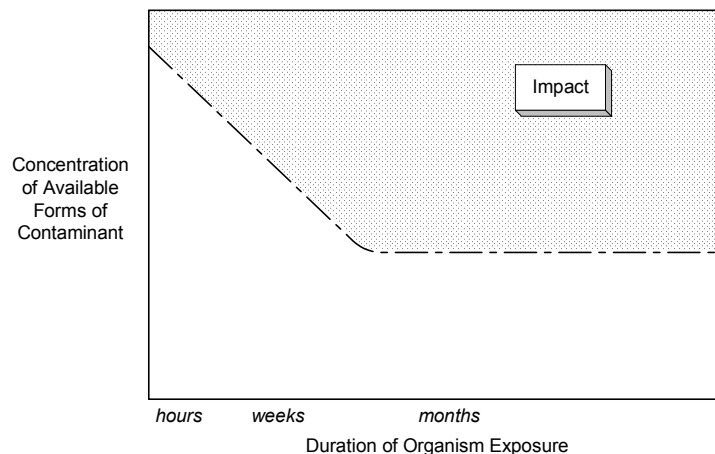
Define Chemical & Toxicity Plumes

Use Specific Conductance & Temperature to Define Tributary Plume

Use Oranges to Define Velocity

Determine Duration of Exposure for Toxic Conditions for Planktonic & Benthic Organisms

Concentration/Duration of Exposure Relationship



ISSUES:

- What Is Impact of Toxicant on Numbers, Types & Characteristics of Desirable Aquatic Life?
 - Direct & Higher-Trophic-Level Impacts
 - Impacts on Zooplankton That Are Essential, Non-Replaceable Food for Larval Fish
 - Consider both Acute & Chronic Impacts
- Does This Impact Represent a Significant, Adverse Impact on Beneficial Uses of Waterbody Fisheries & Other Aquatic & Terrestrial Life of Importance to the Public?

Water Quality Monitoring

- How much (mass per storm) diazinon is transported from the area where applied?
- What are the regulatory requirements for diazinon control and are these exceeded?
 - Does the concentration of diazinon exceed a water quality standard (proposed) at a particular location/compliance point? At any location?
 - What is the allowed frequency of exceedence/violation?
 - What are the consequences/penalties for exceedence violations?
- What is the potential toxicity (diazinon concentration - duration of exposure) to:
 - Water column organisms?
 - Benthic organisms?
 - What is the area, distance and duration of potential toxicity?
- What is the measured toxicity in the runoff/discharge event at various locations in the discharge plume?
 - What is the maximum magnitude and duration of exposure and aerial extent to measured toxic conditions?
- What is the impact of diazinon discharge to the beneficial uses of receiving waters?
 - What impacts are there on the numbers, types and characteristics of receiving water aquatic life?
 - Is this significantly detrimental to the beneficial uses of the waterbody with particular reference to higher trophic level organisms?
 - Water fleas vs. large mouth bass

- What factors influence the water quality impacts of the diazinon runoff/discharge? Such as rainfall intensity, duration, frequency; sprayed area characteristics, etc.
 - Particular concern for high intensity, large storms
 - Will the monitoring program adequately characterize these factors?
- How well do the BMPs being investigated mitigate the impacts of the diazinon runoff for each of the water quality management objectives?
 - What are the factors that influence the performance of the BMP?
 - Are these being adequately evaluated in the study program?
 - How many storms during a year and how many years must a BMP be evaluated to reliably conclude that it is an effective mitigation measure under the range of climatological and other factors that influence its performance
- Others?

- Each water quality monitoring objective has specific monitoring requirements.
- What objective(s) is to be achieved in each of the proposed projects (319(h), CALFED and Prop. 13)? – How reliably is the objective to be assessed?
- What is the level of funding needed to achieve the desired objective?
- Is there adequate funding to achieve the desired objective?

Monitoring of Diazinon Use

- Is diazinon use monitoring a reliable indicator of potential water quality impacts of diazinon runoff from areas where it is applied?
 - Does reduced diazinon use result in improved water quality?
 - If other pesticides are used as replacements for diazinon, what is their impact on water quality?
 - Are there adequate funds and methodology to properly evaluate the potential water quality impacts of alternative pesticides?

Other BMP Monitoring?

- BMPs will need to be developed to control other ag-derived constituents of concern
- OCL pesticides, other pesticides and ag chemicals, unknown caused toxicity, sediment toxicity, nutrients, TOC, dioxins, mercury, sediment/turbidity, selenium, salt/TDS

Discussion of how to proceed to develop monitoring programs for the OP Focus Group pilot study projects for diazinon runoff control.