

# WHAT DAIRY IS DOING TO MANAGE NITRATES

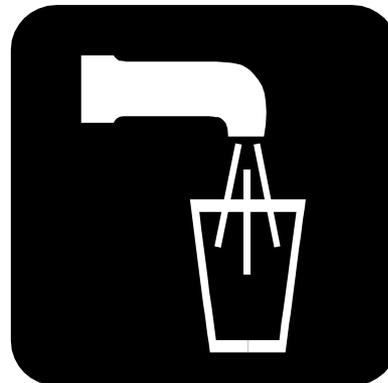
University of California's  
California Institute for  
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# TWO BASIC PARTS TO THE DRINKING WATER TASK

- Nitrogen management on dairies and farms
- Provision of quality water and support for operation and maintenance to communities in need



# WHERE DO WE STAND?

- *Ensure all people have safe food, safe water, and clean air*
- *Excessive nitrate in the wrong place can be harmful*
- *Adequate nitrogen fertilizers are necessary for crops*
- *No single group or agency can get the job done alone*

# NITROGEN MANAGEMENT PRESENTS CHALLENGES

- Nitrogen is “slippery” – easily changes forms
- Moves through and between environmental reservoirs with ease
- Our job is clear - keep nitrogen in the crop – and out of the water



# HOW IS DAIRY DOING ITS JOB?

- Opened our farms to early N research
  - Identified nitrate as an issue
- Dairy WDR regulations (2007)
  - Focus on groundwater protection
  - Strict accounting of nitrogen use
- Self-directed efforts to improve facilities and practices



# DAIRY WATER REGULATIONS

- Waste Management Plan (WMP)
  - Civil engineer required
  - Adequacy of manure system
- Nutrient Management Plan (NMP)
  - Mandates equivalent of 72% Nitrogen Use Efficiency (NUE)
  - Prepared by NMP specialist
- Production well monitoring (>4,000)
- Defined enforcement process in place

# NITROGEN USE EFFICIENCY

- Mandated to apply no more N than 1.4 times crop removal (72%NUE)
- Developed by UC Committee of Consultants as an objective
- An extremely difficult target
- All has to go perfectly
  - Poor weather or bugs in crops can reduce yields and ruin ability to hit the mark

# SOPHISTICATED MONITORING AND REPORTING PROGRAM

- Created Central Valley Dairy Representative Monitoring Program
- Intensive groundwater monitoring of clusters of local dairy farms
- Track progress
- Identify effective management practices (BMPs)
- Governed by dairy producers working with regional board staff

# SELF-DIRECTED ACTIVITIES

- CA Dairy Quality Assurance Program
  - Dozens of workshops - compliance assistance and current knowledge of N use and application
  - Contact with hundreds of producers
  - Third party certifications
- UC Cooperative Extension

# RESEARCH NEEDS

- Research strategy paper underway
- Some initial ideas
  - Methods to accelerate mineralization of organic N before & after application
  - A way to concentrate manure N to facilitate transportation
  - Stabilization of manure N in the ammonium form
  - Mngmt. software to fit local conditions

# SUMMARY

- Regulatory goal – to avoid further movement of N to drinking water & respond to existing conditions
- Testing for N in soils, irrigation water, crops, and manure to properly balance N applications
- Monitoring program to see how we are doing
- Developing a focused research plan

# FOOD & WATER IS A LARGE SYSTEM



- We're working to keep it safe