TKI – Sectagon Stewardship Overview

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TKI is the leading manufacturer of metam sodium.

Goal is to protect and maintain the Sectagon business with highest regard and proactive stance in preventing adverse impact to the community or the environment.

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TKI – Sectagon
California Stewardship

TKI verifies every field adjacent to sensitive sites with scientific verifiable evidence during application that includes:

- **Wind speed during application**
- **Soil moisture**
- **Soil temperature**
- **Air temperature**
- **GPS coordinates cross referenced with PCA identification**

All ground applications in Kern, Tulare , San Luis Obispo , Los Angeles County are supervised by personnel with a valid metam license and a Qualified Applicator Certificate

- Every Sectagon recommendation is verified by a California licensed PCA
- Every field is physically visited, identifying sensitive sites, down wind structures or receptors, and mapped
- All records are retained for documentation.
- If field and/or recommendation is in question, all information, data is faxed to PCA and verbally verified that data was received.

TKI – Sectagon PNW Stewardship

- TKI promotes a Fumigation Management Plan concept emphasizing applicator safety and minimizing the potential for off-target movement
- Fumigation Management Plan Notebooks are provided to Sectagon applicators.
- The Fumigation Management Plan Notebook was produced in cooperation with WSDA.
- TKI has been diligent to work in coordination with regulatory agencies to protect the flexibility of Sectagon application methods.

TKI – Sectagon
PNW Stewardship

- Proactive to EPA & WSDA concerns to monitor and avoid chemigation impacting sensitive sites (roads, hospitals, schools, daycares, etc.) TKI supports the provision for voluntary registration of sensitive sites in Washington.
- Promote properly maintained and operating injection equipment and irrigation systems prior to use for chemigation.
- TKI is working with WSDA to implement training specific to chemigation applicators.
- Promote continuous monitoring during chemigation with Sectagon

TKI – Sectagon PNW Stewardship

- Select distribution and closely monitoring metam sodium users has resulted in rejection of sale of Sectagon to less diligent operators.
- Proactively planning to self-impose guidelines for acceptable application methods within set proximities to residential areas or sensitive sites.

Fumigation Management Plan

Sectagon 42® & Sectagon K-54®

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Chemigation injector trailer and bulk nurse tank

Chemigation application

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Fumigation Management Plan

- Objective

  Initiate proactive response to EPA identified mitigation measure that may be used to enhance product safety and minimize off-target movement of metam sodium when applied via chemigation.

- Goal

Safe and efficient use of metam sodium.

Provide a simple, organized resource.

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Fumigation Management Plan

- FMP approached to address a number of concerns:

1. Applicator Safety
2. Best Management Practices
3. Regulatory Compliance

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Fumigation Management Plan -- Safety

- **Identify and highlight the most frequent causes for applicator exposure**

- ***Do not handle Sectagon without proper Personal Protective Equipment (PPE).***
- ***Review appropriate handler PPE requirements on label.***
- ***Do not use leather gloves or leather boots*.**

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Fumigation Management Plan -- Safety

- We isolate key sections of the label instructions to reinforce the importance of correct PPE:

PERSONAL PROTECTIVE EQUIPMENT (PPE)

(1) Handlers Performing Direct-Contact Tasks

(2) Handlers in Enclosed Cabs

(3) Handlers in Treated Areas While Entry is Restricted

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Fumigation Management Plan -- Safety

- Provide a detailed checklist for operator safety.
- This is an easy, organized way to check all operator safety requirements.
- Initial review of the list identifies deficiencies and helps operator to correct problems before they occur.
- One time review and completion of most forms is all that is needed but must be reviewed.

Safety Equipment Checklist for Handlers (modify as needed)

	Medical evaluation completed an on file with employer
	Respirator Fit Test (date; where is this filed?)
	Record of employee training on type of respirator used

	Clean respirator after use
	Store respirator in clean area, outside of a pesticide treatment or storage area, and in a sealable bag or container
	Check cartridges – change date:
	Are cartridges appropriate for the pesticide? (Verify with label)
	Chemical resistant gloves
	Coveralls over long-sleeved shirt and long pants
	Chemical-resistant apron
	Chemical resistant footwear plus socks
	Clean and maintain PPE per manufactures instructions
	Face-sealing goggles unless full-face respirator is worn
	Eyeflush WPS recommends at least 1 pint per person
	Potable wash water – WPS recommends at least 3 gallons per person

	Clean and maintain PPE per manufactures instructions
	Wash clothing separate from other laundry with detergent and hot water. Wash PPE after each day's use. Discard highly contaminated or saturated clothing.

	Access to pesticide label and MSDS
	Recognize the odor of metam and MITC
	Recognize symptoms associated with different types of exposure
	Familiar with first aid measures
	Clean change of clothes, such as a coverall, in case clothes become contaminated
	Familiar with response procedures in the event of a spill
	Read the pesticide label and understand relevant provisions
Chemical-resistant clothing includes materials made from neoprene, nitrile, or latex or coated with PVC (vinyl).	

Signature_____ Date_____

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- Copies of MSDS and current Product Labels are included in the FMP for easy reference.

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Fumigation Management Plan

- To minimize off-target movement of metam sodium and MITC, the FMP includes a detailed but concise summary of **General Operating Procedures for Chemigation**
- These guidelines are drawn from multiple sources including professional applicators.
- Designed to be effective and practical.

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- All applicators using Sectagon must receive annual training.
- All use of Sectagon must comply with federal label and applicable state laws and rules and, if existing, local ordinances.
- Follow all DOT requirements for handling and transportation of Sectagon, including but not limited to, transportation in stainless steel tanks; placarding; inspected and working valves, hoses, gauges, etc.
- Properly store and label Sectagon in approved bulk storage tank.
- Install lock on shut-off valve to secure bulk storage tank when not in use.
- Use only tanks constructed with materials approved for handling Metam-Sodium and metam potassium.

Sectagon 42® & Sectagon K-54® Fumigation Management Plan -- GOP

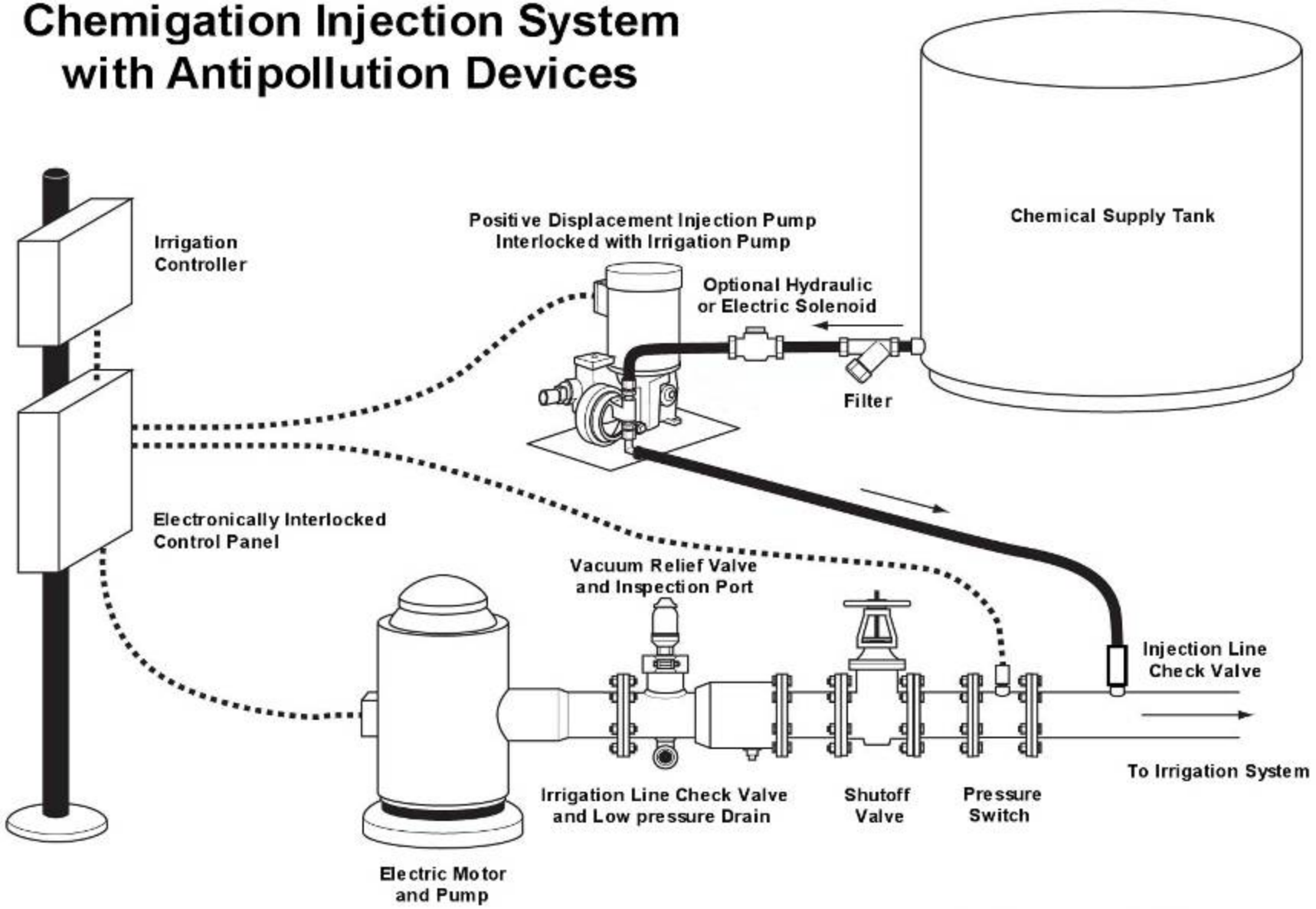
- GOP's detail correctly operating chemigation equipment. Every sprinkler system and chemigation system is different but there are basic requirements.

- Inspect, repair, and monitor application equipment including the center pivot or linear move for proper maintenance and correct operation. Catch can testing may be used to evaluate uniformity of distribution of the irrigation application system.
- All center pivots and linear move systems must be inspected and have, at a minimum, proper functioning anti-siphon devices and backflow prevention devices. There can be no leakage at the injection site that allows non-target discharge of Sectagon.
- Inter-connect injector pump with irrigation pump power supply so if the water flow or center pivot stops, the injection pump shuts off.

Chemigation Safety Devices Checklist

	Backflow Prevention Device (for WA and ID, the following are required) ➢ Irrigation mainline check valve ➢ Vacuum relief valve ➢ Inspection port ➢ Low pressure drain
	Automatic quick closing check valve
	Chemigation injection line check valve with at least 10 psi cracking (opening) pressure
	Positive displacement injection pump
	Interlocking system controls
	Functional pressure switch
	Supply tank setback form water source and at same or lower gradient

Chemigation Injection System with Antipollution Devices



Courtesy of Dr. Larry Schwankl, University of California, UC Davis
Modified by Tom Hoffmann, WSDA Pesticide Management Division

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Fumigation Management Plan -- GOP

We make recommendations in the FMP on how to minimize off-target movement during chemigation. Some simple system modifications such as drop tubes, chemigation drizzle boom, and proper use of end-guns can significantly minimize drift.

- Operate the irrigation system at the lowest pressure possible to maintain coverage and minimize drift. Low-pressure systems (35 psi or less) outfitted with drop tubes to bring nozzles closer to soil surface are recommended to minimize drift.
- Center pivots equipped with impact head sprinklers are not recommended for chemigation.

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Fumigation Management Plan -- GOP

- ***Chemigation must be continuously monitored to avoid application during conditions that may promote off site movement or may pose a risk to bystanders or a sensitive area.***

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Fumigation Management Plan -- GOP

- ***End-guns should not be used outside of field margins adjacent to sensitive sites or during conditions prone to off-site movement.***
- ***Do not use end-guns in situations where spray will contact public roads.***
- ***Do not use end-guns in situations adjacent to high traffic roads, highways, or interstates.***
- ***Shut-off end-guns 50 feet before fumigant solution comes into contact of public roads and/or any sensitive areas.***

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Applicator Guidance is provided:

- Location and occupancy of sensitive areas (Site Plan)
- Air and soil temperature (current and forecast)
- Wind Conditions (current and forecast)
- Application equipment setup, operation, and calibration
- Proper Field Preparation
- Proper signage: placement and both start and end dates and time, and removal timeframe
- Awareness of odors downwind of treated site
- Emergency response procedures
- Application Records

Fumigation Management Plan -- GOP

Sectagon 42® & Sectagon K-54® Fumigation Management Plan -- GOP

- Specific information is provided to avoid weather conditions and field conditions that promote off-target movement and concentration of MITC during inversions.

  There is a high potential for air inversions if all the following conditions apply:
  During nighttime hours (generally between sunset and sunrise, but can occur as much as two hours before sunset or two hours after sunrise), and
  Winds are blowing less than 8 mph, and
  Stars are visible (skies are generally clear).
  Ambient air temperature cooler than soil and/or chemigation water temperature.

Sectagon 42® & Sectagon K-54® Fumigation Management Plan -- GOP

- Specific information is provided to avoid weather conditions and field conditions that promote off-target movement and concentration of MITC during inversions.

DO NOT CHEMIGATE When:

- Soil temperature is outside the range of 40-90°F at 3-inch depth.
- Air temperature is above 80°F.
- Wind speed is greater than 10 mph.

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Fumigation Management Plan

FMP includes site specific mapping for the chemigation.

SECTAGON CHEMIGATION SITE MAP

Grower:_____Field:_____

Applicator Name:_____

Address:_____

Phone:_____

Directions to site: _____

_____

_____

_____

- **Include *adjacent sensitive areas* (roads, homes, businesses), prevailing wind directions, location of injection equipment, chemical storage, etc.:**

- ***NOTE: A template is provided to draw a map***

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Fumigation Management Plan

- For regulatory compliance a generic application record form is provided. Additionally, a link to the WSDA for the five versions of WSDA Pesticide Application Records is provided.
- The FMP can be modified through out to comply with state specific regulations for other areas.

WSDA Pesticide Application Records are available at:
http://agr.wa.gov/PestFert/Forms/FormsName.htm

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Fumigation Management Plan

- **Record is kept for individual applicator calibration and center pivot operation guidelines.**

- **A copy of the Applicator License kept in the FMP Notebook.**

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Fumigation Management Plan

- Emergency contacts and spill plan are included in the FMP.
- ***In case of emergency contact:***
- **APPLICATOR**
- **Irrigator**

- **Emergency Phone Numbers for:**
- **Spill onto a Roadway:**
- **Release into Surface Water:**
- **Bystander Exposure:**
- **Injury or Exposure Requiring Medical Treatment:**

Sectagon 42® & Sectagon K-54®
Fumigation Management Plan

- The FMP Notebook will be updated as needed to comply with good agricultural practices and regulations.
- Input is sought from growers, dealer & distributors, commercial applicators, research scientists, and regulatory personnel.
- Currently, the notebook is being translated to Spanish.

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PNW Stewardship

- Leadership in planning 2008-2009 research to compare chemigation vs. soil injection vs. innovative application methods to minimize off target movement.