

## Acrolein Use in Southwestern States Response to EPA data request to OPMP

June 27, 2022

Acrolein is a restricted use pesticide for control of submerged and floating aquatic weeds and algae in irrigation canals and irrigation reservoirs in some states. Due to ecological and human health risks, EPA is seeking information to help inform their risk mitigation plan for acrolein. Two partially overlapping sets of questions developed by EPA personnel were forwarded through the Western IPM Center from the USDA Office of Pest Management Policy. I integrated the two lists into a single set of questions and gathered responses from informed stakeholders in the Southwest Desert region. This document includes what I was able to gather from the follow states: Arizona, New Mexico, Utah, and Colorado.

I was able to conduct detailed interviews with 4 personnel involved at three locations, two in Colorado and one in Utah. A knowledgeable contact from a third Utah irrigation district indicated that they do not use acrolein. I spoke briefly with individuals at other identified districts, or left messages and followed up, but was unable to connect with someone knowledgeable enough to respond to EPA's questions.

What follows are the detailed responses from interviewees.

### Colorado

#### District 1

1. For which state or region are you providing answers?
  - a. Colorado, Delores Water Conservancy district
2. What is the average single application rate used when treating with acrolein (in ppm)?
  - a. 4ppm, usually. No more than 7 or 8ppm, max. They keep rates as low as possible. Low rates may be applied monthly.
3. What duration of treatment is used?
  - a. 1-hour sets
4. Are higher application rates (ppm) needed for certain situations? Please explain.
  - a. Higher rates would be needed to control a large growth of pond weed, 4 or 5 ft. tall, esp. American pond weed. However, they maintain canals such that the weeds never reach that point. So low rates mentioned earlier are their highest rates used.
5. What is the average retreatment interval in days?
  - a. 30 days.
6. What is the average number of applications per year?
  - a. Up to 4 to 5 spot-applications per year, depending on heat and the water season. It is expensive. They only use it if needed.

- b. It is used for a few spot treatments when other herbicides fail in shallow parts of the canal, because of the rapid, dense growth of American Pond Weed.
- 7. Are there specific times during the year when acrolein is applied and, if so, when?
  - a. June – Sept, Oct. if needed.
- 8. Is acrolein mainly applied as part of a preventative maintenance program, or when the need arises due to increased weed pressure?
  - a. Currently, when the need arises.
- 9. When used for preventative maintenance, are acrolein applications usually made at the same application point, or at different points?
  - a. Not used for preventative maintenance.
- 10. What is the effective treatment area covered by an acrolein application (How much canal distance is covered with a single application)?
  - a. About 3 miles.
- 11. Please provide any details regarding requirements for water flow, temperature, injection time length and/or any others relevant to your particular case at the time of application
  - a. The higher the pH, the more herbicide they use; at colder temperatures, they use higher rates, as indicated on the product label.
- 12. What are potential chemical alternatives to acrolein for treating submerged weeds?
  - a. Cascade [Dipotassium salt of endothall], an injectable. For years, this product was not available due to restrictions on water and livestock. Since those restrictions were lifted, they use it now, strictly for pond weed.
  - b. For algae, they use Argos [Copper Ethanolamine Complex].
  - c. Acrolein is the “go to” chemical for control of American pond weed.
- 13. What are their impacts on the frequency and treatment rate of acrolein applications?
  - a. They reduce potential applications of acrolein significantly.
- 14. What are potential non-chemical alternatives to acrolein for treating submerged weeds?
  - a. None that are effective. They have tried biological controls, fish, etc. They can't keep up with the weed, and they are expensive.
- 15. What are the advantages and disadvantages of acrolein relative to other alternatives?
  - a. It is the only herbicide that effectively controls American pond weed. Also, it keeps a “super clean” canal system.
  - b. Disadvantage, it is very expensive and also dangerous to use.
- 16. What is your impounding procedure following treatment with acrolein? How long is the water impounded after treatment with acrolein? Following treatment, is the treated water applied to the field or discharged to waterways, or both?
  - a. Water is not impounded. Use is continuous as the water is treated. Following treatment, treated water may be applied to agricultural fields, but it is not discharged to any waterways.
- 17. Are acrolein applications made to canals connecting to rivers or other natural waterways? If so, what is the distance between the application site and the natural waterway?

- a. There are no connected waterways. All canal outlets are on agricultural fields, except a few that open onto stock ponds for fish.
  - b. Acrolein dissipates in 8 to 12 hours. All gates remain closed for 24 hours after application.
18. Are you aware of any fishing that occurs in canals? If so, what means, if any, are used to communicate acrolein application to fishermen specifically?
- a. Not aware of any fishing. Canals are locked and posted. They send out newsletters to direct farmers to close any pond gates, etc. prior to applications. All dates are set in advance and prior notifications are sent.
  - b. Based on observation, acrolein kills fish immediately, even at the low rates they use. Following application, there would be no live fish available to catch.
19. What, if any, procedures are used to prevent acrolein reaching fish-bearing waters?
- a. The notifications sent out to farmers. Also, they make a follow-up phone call prior to application to the farmers who have fish ponds.
20. What current restrictions on canal access are in place and where are they located?
- a. Canals are gated and padlocked at every intersection or any road.
21. To what extent are current restrictions on canal access effective at limiting access?
- a. Good. Very little problem with people accessing canals.
22. Is any temporary signage currently used to restrict activities (e.g., fishing, swimming) on canals during certain periods?
- a. Yes, when Magnacide is applied. Plus, they have no trespassing signs posted.
23. What signage is currently in place near irrigation canal access points?
- a. "No Trespassing" signs.
24. Where is any signage located relative to sections of canal that are treated with acrolein?
- a. Special postings are made when Magnacide is applied. Otherwise, there are "No Trespassing" signs throughout the system at intersections and potential access points.
25. Are there any local public information campaigns or education regarding canal access, swimming, or fishing, in conjunction with acrolein treatments?
- a. Notification by newsletter to farmers, and notification in the local paper 2 weeks prior to application.
26. Apart from signage, are there any other methods used to notify acrolein applications to irrigation canal users?
- a. Regular newsletters, plus newspaper notifications of applications.
27. Are any dyes currently used to track applications of acrolein or other substances in irrigation canals?
- a. No. It is a good idea.
28. What information is available on the properties of specific dyes used in waterways, such as breakdown time when combined with acrolein?
- a. n/a
29. Is there any additional information EPA should consider on acrolein use in irrigation canals?

- a. Acrolein is uniquely effective against American pond weed. They would prefer to have other, safer options in terms of applicator safety and ecological impact, but due to lack of other effective options, continued availability of the product is important.

## District 2

1. For which state or region are you providing answers?
  - a. Colorado, Henrylyn Irrigation District
2. What is the average single application rate used when treating with acrolein (in ppm)?
  - a. The contractor who works with this district said that they are one of only two or three districts (including one in Wyoming) for which they apply acrolein. Applications range from 0.25 to 1.0 gallons of product per CFS. Average would be about 0.5 gal. Would not go less than .25 gal/CFS. They try to stay around 5ppm, to 15ppm max. For this client, they tend to come in when the irrigation canal is choked, breaking over the banks. In this case, in this case their rate is typically around 5ppm.
3. What duration of treatment is used?
  - a. 2.5 to 3 hours.
4. Are higher application rates (ppm) needed for certain situations? Please explain.
  - a. Yes, probably. Mainly, when there is water in the canal over a long period of time, promoting weed growth. It is one specific canal they tend to use it on, not throughout the system. They use it for pond weed. It grows fast in summer, in hotter weather. This is the only time we treat. In some years, they don't have to treat because water doesn't build up in the canal for long periods.
5. What is the average retreatment interval in days?
  - a. A single application in a typical year, only when the problem arises.
6. What is the average number of applications per year?
  - a. One per year in the years when they need it. Two out of the past 5 or 6 years, they didn't need to use it. He recalls only one year they needed two applications.
7. Are there specific times during the year when acrolein is applied and, if so, when?
  - a. Late July or August.
8. Is acrolein mainly applied as part of a preventative maintenance program, or when the need arises due to increased weed pressure?
  - a. When the need arises.
9. When used for preventative maintenance, are acrolein applications usually made at the same application point, or at different points?
  - a. The same points.
10. What is the effective treatment area covered by an acrolein application (How much canal distance is covered with a single application)?
  - a. 12 to 15 miles, typically.
11. Please provide any details regarding requirements for water flow, temperature, injection time length and/or any others relevant to your particular case at the time of application

- a. They make the application when water temperatures are 65-70 degrees or more. At these temperatures, lower rates are effective.
- 12. What are potential chemical alternatives to acrolein for treating submerged weeds?
  - a. For pond weed, acrolein is the only herbicide that is effective. They use copper sulfate in other canals for algae.
- 13. What are their impacts on the frequency and treatment rate of acrolein applications?
  - a. No impact. They apply different herbicides for algae and other weeds.
- 14. What are potential non-chemical alternatives to acrolein for treating submerged weeds?
  - a. They shut down the water to prevent the build-up of stagnate water in the problematic canal, when they can. In years they have adequate water, the canal remains full throughout the year and they tend to need treatment. In a water-short year, no application is needed.
- 15. What are the advantages and disadvantages of acrolein relative to other alternatives?
  - a. n/a
- 16. What is your impounding procedure following treatment with acrolein? How long is the water impounded after treatment with acrolein? Following treatment, is the treated water applied to the field or discharged to waterways, or both?
  - a. They treat out of reservoir into canal, spanning 5 or 6 miles to the first head gate.
- 17. Are acrolein applications made to canals connecting to rivers or other natural waterways? If so, what is the distance between the application site and the natural waterway?
  - a. No.
- 18. Are you aware of any fishing that occurs in canals? If so, what means, if any, are used to communicate acrolein application to fishermen specifically?
  - a. No.
- 19. What, if any, procedures are used to prevent acrolein reaching fish-bearing waters?
  - a. In our canals, there are none, it goes out for agricultural irrigation only.
- 20. What current restrictions on canal access are in place and where are they located?
  - a. Most canals are not gated or locked. They are in a rural area. Not a lot of people around.
- 21. To what extent are current restrictions on canal access effective at limiting access?
  - a. They have had no issues with people around the canals.
- 22. Is any temporary signage currently used to restrict activities (e.g., fishing, swimming) on canals during certain periods?
  - a. None that the irrigation district uses. The contractor posts signs in certain areas when they do the acrolein the treatment.
- 23. What signage is currently in place near irrigation canal access points?
  - a. No signage.
- 24. Where is any signage located relative to sections of canal that are treated with acrolein?
  - a. No signage.
- 25. Are there any local public information campaigns or education regarding canal access, swimming, or fishing, in conjunction with acrolein treatments?

- a. None that the irrigation district manager is aware of.
- 26. Apart from signage, are there any other methods used to notify acrolein applications to irrigation canal users?
  - a. Not that he knows of.
- 27. Are any dyes currently used to track applications of acrolein or other substances in irrigation canals?
  - a. No.
- 28. What information is available on the properties of specific dyes used in waterways, such as breakdown time when combined with acrolein?
  - a. n/a
- 29. Is there any additional information EPA should consider on acrolein use in irrigation canals?
  - a. Irrigation District Manager: Acrolein has been a “life saver” since they discovered and started using it five to seven years ago. They have found nothing else that controls the pond weed problem. Contractor: The irrigation district calls us when they want us to come out. We call them when we start treatment and call again when the treatment is done. Magnacide is the most economical treatment available for control of pond weed, but it can only be used in areas where the water can be held from waterways. Cascade [Dipotassium salt of endothall] is the alternative in these other situations.

## Utah

The information below covers three irrigation districts: Ogden River Water Users Association, South Ogden Conservation District, and Weber-Box Elder Conservation District. Their Acrolein use is limited to the Ogden River Water Users Association. A knowledgeable contact from an additional Utah irrigation district I reached out to indicated that they do not use acrolein.

1. For which state or region are you providing answers?
  - a. Ogden River Water Users Association.
2. What is the average single application rate used when treating with acrolein (in ppm)?
  - a. 1.3 ppm
3. What duration of treatment is used?
  - a. 6 hours
4. Are higher application rates (ppm) needed for certain situations? Please explain.
  - a. Not in their experience.
5. What is the average retreatment interval in days?
  - a. 25 days
6. What is the average number of applications per year?
  - a. 5 treatments per year.
7. Are there specific times during the year when acrolein is applied and, if so, when?
  - a. May to Sept., depending on when the flow changes. When we hit a certain level of flow in the canal, they start treatments. Flow rate for starting treatments may vary by canal.

8. Is acrolein mainly applied as part of a preventative maintenance program, or when the need arises due to increased weed pressure?
  - a. Preventative maintenance.
9. When used for preventative maintenance, are acrolein applications usually made at the same application point, or at different points?
  - a. Different points.
10. What is the effective treatment area covered by an acrolein application (How much canal distance is covered with a single application)?
  - a. Typically, 10 miles, but it might vary based on other factors.
11. Please provide any details regarding requirements for water flow, temperature, injection time length and/or any others relevant to your particular case at the time of application
  - a. They follow the label requirements and recommendations. Rates and methods are determined based on measurements of the system as outlined on the label.
12. What are potential chemical alternatives to acrolein for treating submerged weeds?
  - a. There are no other alternatives that are as effective.
13. What are their impacts on the frequency and treatment rate of acrolein applications?
  - a. n/a
14. What are potential non-chemical alternatives to acrolein for treating submerged weeds?
  - a. Manual removal, which is time consuming and labor intensive. But by the time vegetation is big enough to remove manually, the conditions are such that the canal is already choking. They cannot rely on this method.
15. What are the advantages and disadvantages of acrolein relative to other alternatives?
  - a. This is the only effective approach they have found.
16. What is your impounding procedure following treatment with acrolein? How long is the water impounded after treatment with acrolein? Following treatment, is the treated water applied to the field or discharged to waterways, or both?
  - a. Impounding doesn't apply because they are not discharging into reservoirs or waterways. Strictly irrigation for agriculture.
17. Are acrolein applications made to canals connecting to rivers or other natural waterways? If so, what is the distance between the application site and the natural waterway?
  - a. No connecting waterways.
18. Are you aware of any fishing that occurs in canals? If so, what means, if any, are used to communicate acrolein application to fishermen specifically?
  - a. There are no fish in the canal.
19. What, if any, procedures are used to prevent acrolein reaching fish-bearing waters?
  - a. There are no connected waterways.
20. What current restrictions on canal access are in place and where are they located?
  - a. They have gates and no trespassing and no swimming signs; areas are fenced off. All access roads are gated and locked.
21. To what extent are current restrictions on canal access effective at limiting access?

- a. Can't get in without a key. They see occasional trespassers. Canals are posted. If they find anyone, they kick them out. Not very often.
- 22. Is any temporary signage currently used to restrict activities (e.g., fishing, swimming) on canals during certain periods?
  - a. No temporary signage. They have "No Swimming" signs posted throughout the system.
- 23. What signage is currently in place near irrigation canal access points?
  - a. "No Swimming" signs.
- 24. Where is any signage located relative to sections of canal that are treated with acrolein?
  - a. The entire system.
- 25. Are there any local public information campaigns or education regarding canal access, swimming, or fishing, in conjunction with acrolein treatments?
  - a. No.
- 26. Apart from signage, are there any other methods used to notify acrolein applications to irrigation canal users?
  - a. No.
- 27. Are any dyes currently used to track applications of acrolein or other substances in irrigation canals?
  - a. No.
- 28. What information is available on the properties of specific dyes used in waterways, such as breakdown time when combined with acrolein?
  - a. n/a
- 29. Is there any additional information EPA should consider on acrolein use in irrigation canals?
  - a. Despite potential risks to the applicator, this product is the best way to keep the waterways clean. Staff are trained and apply the chemical carefully according to label instructions. They have tried other methods without success. They are open to other options, but haven't found anything that works as well.

### **Arizona and New Mexico**

There are no known uses of acrolein in these states.

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