Ecological Effects Branch

JAN 14 1974

PP# 1F1101 and FAP# 3H5022. Aquatic uses of diquat.
Evaluation of amendment of 10/4/73.

Coordination Branch
and Toxicology Branch, RD

In our last review (J. Wolff, 8/3/73) we made several suggestions regarding revisions needed in Sections B and F before further consideration could be given to this petition. We also deferred to the Office of Water Programs on the practicality of the proposed label restrictions, as well as to specifications that could be designed for the charcoal or bentonite filtration process for potable water.

In this amendment the petitioner has replied to the various points made in our (COB) letter of 9/6/73 incorporating these suggestions. No new data have been submitted. We will discuss these points in the order listed in the letter.

1. We requested a more restrictive labeling. We proposed limiting uses to bodies of water under complete control of the user (eliminating the use in Florida where this is not enforceable), to bodies of water which are used for potable water only after bentonite or charcoal treatments, and to bodies of water which are not used as a source of irrigation water.

Petitioner's Comments

The petitioner has indicated a willingness to restrict the labelling to bodies of water under the complete control of the user. He contends that the Florida use in drainage and flood canals and ditches is feasible in this context since the sale of diquat would be limited to persons who had a permit from a responsible government agency.

Several additional comments which relate to restrictions in use of treated water for drinking water and irrigation purposes will be discussed below.

Our Comments

In our opinion the removal of the waiting period between treatment and use of the water (revision made in the 5/25/73 amendment) means that we must contend with the possibility that water could contain 0.5 ppm rather than the 0.01 ppm previously considered.

Since the petitioner has indicated agreement, we believe the fresh water lakes and reservoirs usages should be restricted to those waters under the complete control of the user.

As for the Florida use in drainage and flood canals and ditches, we have previously concluded that such a restriction is not practical (see Memo of Conference 3-27-73). Since in Florida diquat is intended for use in interconnected water systems there would be no way to alert treatment plants that diquat-treated water was entering their systems. In our opinion the Florida use should therefore be eliminated. Alternatively the food additive tolerance proposal for potable water should be increased to 0.5 ppm.

2. We requested that the proposed tolerances in potable water and fish be expressed in terms of the diquat ion.

Petitioner's Comment

The petitioner contends that the wording in the amended Section F is in conformity with that in the diquat regulation (Sec. 180.226).

Our Comments

We have previously suggested and reiterate now that the tolerances for both paraquat (Sec. 180.205) and diquat (Sec. 180.226)be revised to express the tolerances in terms of the respective ion.

3. Since the adequacy of the proposed tolerance of 0.01 ppm for potable water would depend almost entirely on the efficacy of the charcoal or bentonite filtration process, we asked for some description of/or specification for the treatments.

Petitioner's Comments

The petitioner's position is that the current water treatments are adequate for removal of diquat and that the recommendation that filtration plants use activated carbon or bentonite should be sufficient.

Our Comments

We reaffirm our previous conclusion that any regulation issued should include specifications for the potable water treatments. We have deferred to the Office of Water Programs (see letter of 8/24/73 to Mr. John T. Rhett, Deputy Assistant Administrator for Water Program Operations) on what specifications could be designed for the charcoal or bentonite filtration process. No reply has as yet been received.

4. The proposed residue program should include studies on irrigation canals. A modified use pattern will be needed to insure that maximum residues in the water in irrigation canals will be at an acceptable level. Additional data on irrigated crops may be needed.

Petitioner's Comment

It is indicated that if the use of diquat in irrigation canals is to be recommended in the future, then residue studies to support this use will be conducted. It is also noted that the tolerances for irrigated crops suggested by us have now been proposed.

Our Comments

It is true that we requested negiglible residue level tolerances for irrigated crops (letter of 12-19-72) and these are proposed in the latest Section F (0.1 ppm in forages and 0.02 ppm in other crops). However, this request was based on the previous usage pattern which called for a waiting period of 14 days before treated water was used in irrigation. If we could have been assured that levels in the irrigation water were 0.01 ppm or less, then the recommended tolerances for irrigated crops were appropriate. Now, however, with the removal of this waiting period we must consider the possibility that treated water for irrigation could contain about 0.5 ppm diquat rather than the 0.01 ppm previously contemplated. If this is the case, then the limited data for irrigated crops indicate that the proposed tolerance levels would no longer be adequate and additional residue studies are needed to determine appropriate (higher) tolerance levels. As an alternative to this approach, petitioner should include a label warning against use in bodies of water to be used as a source for irrigating crops.

Conclusions

1. If the proposed uses are limited to those under the complete control of the user with restrictions against use of treated water for irrigation or livestock watering, then this will resolve any problem with residues in irrigated crops or with secondary residues in meat, milk, poultry, or eggs.

The use in Florida should be eliminated from the label since it is impractical to limit use in Florida to bodies under the control of the user.

2. In regard to potable water, we have asked the Office of Water Programs for guidance in designing specifications for charcoal or bentonite filtration processes to insure that residues in drinking water are reduced to 0.01 ppm or less.

3. If the petitioner is still unwilling to accept these restricted uses, we must proceed with the assumption that water bearing 0.5 ppm diquat could be used for irrigation or livestock watering. In this case additional residue studies for representative irrigated crops using water containing 0.5 ppm will be needed.

The use of treated water in livestock watering would place these aquatic uses in category 2 with respect to Sec. 180.6 (a) and appropriate meat, milk, poultry, and egg tolerances will also be required. Additional cattle and poultry feeding studies may be needed.

4. The proposed tolerance of 0.02 ppm for fish (degutted, descaled, and beheaded) is appropriate. A chemical method (RM-5) is available for determining diquat residues in fish. A method tryout will be conducted by our chemists.

Recommendations

We recommend that the proposed tolerances not be established for the reasons outlined in Conclusions 1-3.

COB should note:

1. We have as yet received no reply to our inquiry (see letter of 8-24-73 to Mr. J.T. Rhett, Deputy Ass't Administrator for Water Program Operations, EPA) regarding purifications for the activated charcoal or bentonite filtration processes for potable water.

2. We recommend that the regulations for both paraquat (Sec. 180.205) and diquat (Sec. 180.226) be revised to express the tolerances in terms of the respective ions.

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cc: Tox. Br., RO-130 (FDA), P. Critchlow, Ecol.Eff.Br. Chem.Br. Glasgow, RF, PP# 1101, Duffy.

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RD/I-J.G. Cummings: 1/14/74
RD/I-R.S. Quick: 12/12/73