Data Evaluation Record

1. Chemical: Affirm Technical
   Sha.No: 122804
   2/13/1986

2. Test Material: MK-936 91% a.i.

3. Study Type: Fish 96-hr LC50
   Species Tested: Sheepshead Minnow

4. Study I.D.: Author: Ward, G. Scott
   Title: Acute Toxicity of MK-936 to the Sheepshead Minnow
          (Cyprinodon variegatus)
   Laboratory: Environmental Science and Engineering, Inc.
   Study No: 85-347-0100-2130
   Study Date: October 1985
   Study submitted to EPA by: Merck Sharp and Dohme Research
   Laboratories
   Acc. No: 259623

5. Reviewed By: Daniel D. Rieder
   Wildlife Biologist
   EEB/HED
   Signature: [Signature]
   Date: 2/13/86

6. Approved By: Norm J. Cook
   Supervisory Biologist
   EEB/HED
   Signature: [Signature]
   Date: 2/13/86

7. Conclusions: This study is scientifically sound.
   96-hour LC50 = 15 ppb
   95% Confidence Limits = 11-20 ppb.
   This study will fulfill the guideline requirement for an estuarine fish acute
   96-hour LC50

8. Recommendations: N/A
9. **Background:** This study was provided to support registration.

10. **Individual Studies:** N/A

11. **Methods and Materials:**

   A. **Test Material:** MK-936  
      Percent active ingredient: 91%

   B. **Test Organisms:** Sheepshead Minnow *(Cyprinodon variegatus)*  
      Source: S/P Inc.  
      Length: $X = 12 \pm 1$ mm S.L.  
      Acclimation: 17 days, 0 hrs without food  
      Organisms per container: 10  
      No. level: 10  
      Weight: $X = 41 \pm 13$ mg wet wt.  
      Loading: 0.046 g/l

   C. **Test Containers:** Glass  
      Size: 10 liter with 9 liter test solution  
      Replicates: 1  
      Aerated: No

   D. **Test Conditions:** Static, renewal after 48 hrs.  
      Photoperiod: 14 hrs/day  
      Temperature: 19-21°C  
      Controls: Solvent and untreated  
      Solvent: acetone  
      Test solution: Natural Seawater

   E. **Statistics:** Stephan, 1982, Moving average

12. **Reported Results:**

   96-hour LC$_{50}$ = 15 ppm  
   95% C.L. = 11-20 ppb

<table>
<thead>
<tr>
<th>CONCENTRATION PPB</th>
<th>MORTALITY</th>
</tr>
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<tbody>
<tr>
<td>Nominal</td>
<td>24Hrs</td>
</tr>
<tr>
<td>Control</td>
<td>0</td>
</tr>
<tr>
<td>Solvent Control</td>
<td>0</td>
</tr>
<tr>
<td>4.7</td>
<td>0</td>
</tr>
<tr>
<td>7.8</td>
<td>0</td>
</tr>
<tr>
<td>13</td>
<td>40</td>
</tr>
<tr>
<td>22</td>
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<tr>
<td>36</td>
<td>80</td>
</tr>
<tr>
<td>60</td>
<td>100</td>
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</table>

13. **Study Authors Conclusions:**

   LC$_{50}$ (ppb)  
<table>
<thead>
<tr>
<th>24Hrs</th>
<th>48Hrs</th>
<th>72Hrs</th>
<th>96Hrs</th>
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<tbody>
<tr>
<td>18</td>
<td>16</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>
14. **Reviewers Discussion and Interpretation of the Study:**

   **A. Test Procedures:** The test procedure was acceptable.

   **B. Statistical Analysis:** The statistical analysis results are consistent with the raw mortality data.

   **C. Discussion/Results:** This test shows that MK-936 is very highly toxicity to estuarine fish.

   **D. Adequacy of the Study:** This study fulfills the guideline requirement for an estuarine fish LC50.

15. **Completion of One Liner for Study:** One-liner completed

16. **CBI Appendix:** N/A