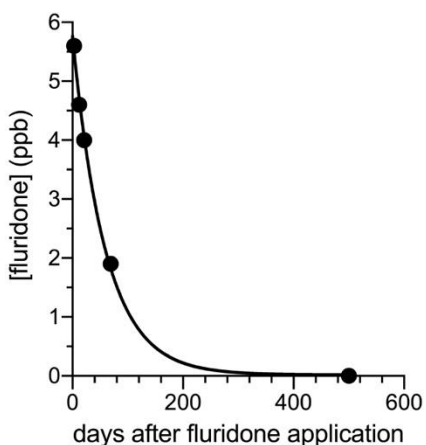


### LaPSI Monitors Herbicide Lifetime on Lake Papakeeche

Among the lake activities of the citizen-scientist group, LaPSI (Lake Papakeeche Sustainability Initiative, Inc.), this past summer the group implemented an additional water testing assay. As many lake residents know, a systemic herbicide, Fluridone, has been added to the lake each spring—early summer in recent years to reduce the growth of unwanted plant biomass that can be visually unattractive, impede lake use, and deplete the water of essential oxygen if allowed to grow unchecked. While a number of environmental factors affect how long the herbicide remains in the lake post-application, this lifetime is one of the key determinants of how effective the application is and what, if any, precautions should be taken by lake residents during and after the application. To gain fundamental new information on this problem, LaPSI members Diane Tulloh, Jody Hedges, Jan Laurent and Steve Longstreet took several water samples from a single, central site on Lake Papakeeche on four occasions after Fluridone was applied to the lake this past spring.



The concentration of Fluridone in each of these water samples (expressed in parts per billion, ppb) was determined by a commercial analytical laboratory (Pacific Agricultural Laboratory, Sherwood, OR). Using these concentration data, a decay curve was plotted and is shown in the accompanying figure. Four data points were taken at days 3, 12, 21 and 69 post-application. The data point at 500 days represents the "infinite time" point when Fluridone concentration is assumed to be zero and which allows the data to be fit using a single exponential decay function. As seen in the plot, Fluridone concentration was 5.6 ppb at day 3 post-application, and decayed to 1.9 ppb after 69 days. The calculated decay curve (shown in black) fits the data points well and yields a half-life ( $t_{0.5}$ ) of 41 days. This means that it took 41 days after the

application of the Fluridone for its concentration to decay to one-half of its original value. By way of reference, this half-life lies within the range of values measured at other lakes in the US and elsewhere for the same herbicide. How this  $t_{0.5}$  value varies from season to season is presently unclear, but LaPSI aims to make these measurements each season to gain a deeper understanding of the variability and how it may impact the effectiveness of the treatment. Lake residents should be aware that, even though lake buoys are removed within a month or so of herbicide application, herbicide concentration remains relatively high at that time given the measured half-life determined from this work.

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