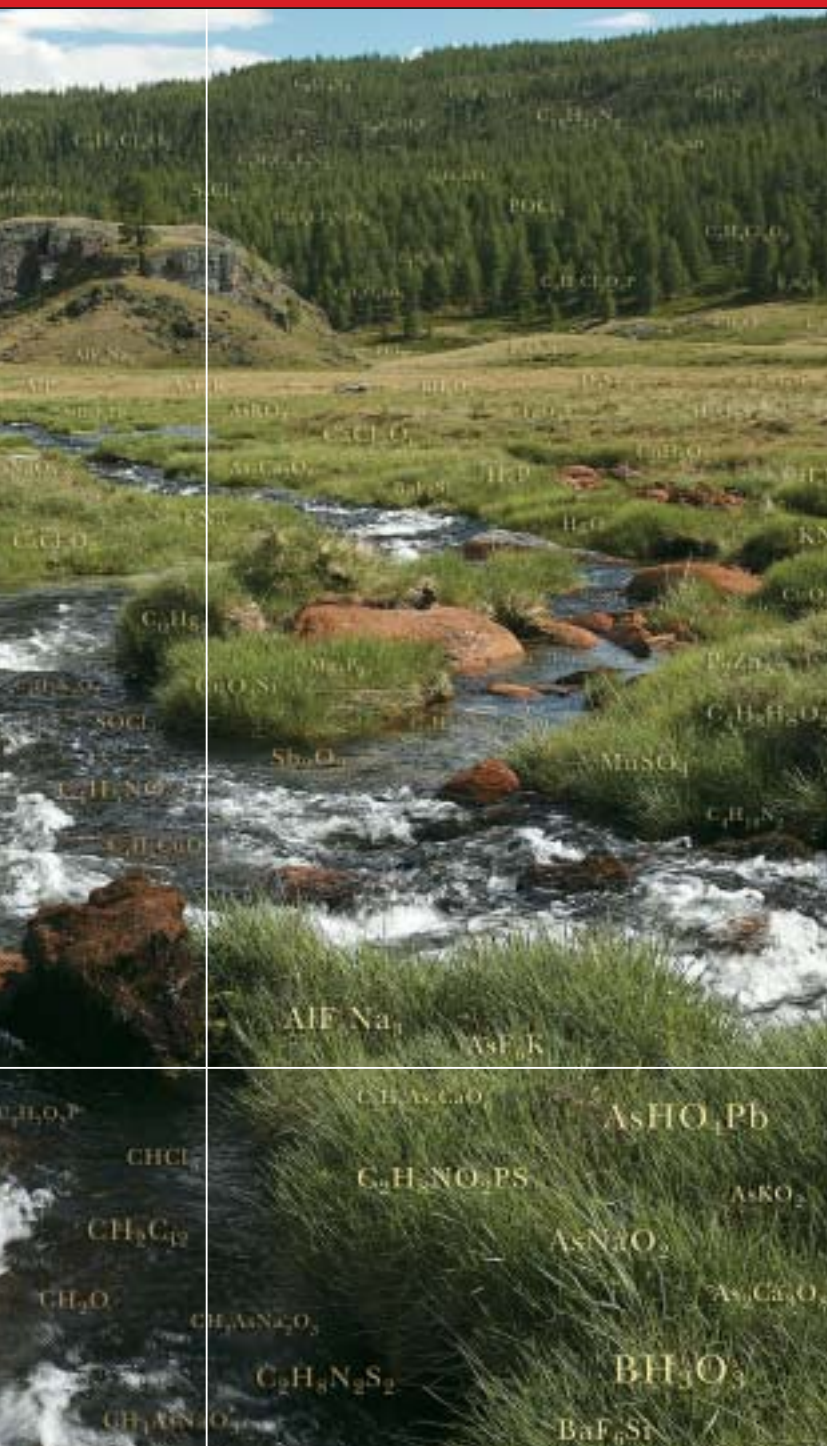


**Now, a faster, easier way  
to test the ecotoxic impact of  
chemicals on our environment...**



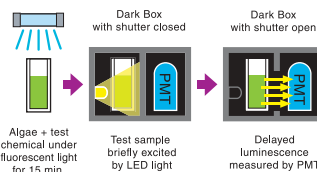
**Bio-luminescence gives faster answers**

Agriculture and industry use thousands of chemicals that should be tested for ecotoxicology. But the current standard tests take several days, are costly and require special skills and equipment.

So, Hamamatsu is developing an algae-based test that works in less than a day, often in minutes!

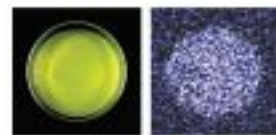
It's simple, low-cost and employs advanced light-sensing technology...

First, a test chemical is added to a vial of algae and cultivated under fluorescent light for 15 minutes. Then the vial is placed in a dark box and briefly excited by LED light. After this, the



**Hamamatsu is opening  
the new frontiers  
of Light \* \* \***

algae will emit ultra-weak levels of light, called "delayed luminescence" (or delayed fluorescence). The greater the toxic effect of the chemical, the weaker the light.



*A liquid suspension of green algae and its delayed luminescence.*

The challenge is to accurately measure this faint luminescence.

But Hamamatsu is uniquely able to do this, with its ultra-sensitive photomultiplier tubes (PMTs), a long-time specialty.

It makes for faster, easier ecotoxicological testing. And it's Hamamatsu's way of helping make our world a healthier, better place to live.

By continuing to open the new frontiers of Light.  
<http://jp.hamamatsu.com/en/rd/publication/>

**HAMAMATSU**

*Photon is Our Business*