



Environmental Quality Assessment of contaminated soils

Environmental quality of soils is determined using analytical chemistry methods, with expensive and sophisticated equipment. Toxicity assays provide a global response regarding the danger of contaminated soil to living organisms. However bioassays are based in lengthy experimental procedures (between 7 and 28 days) to provide reliable results. Normalized soil assays use different species of earthworms and collembola that must be grown and maintained in specialized facilities. Partners to further develop the technology and/or to establish commercial agreements along with technical cooperation are sought.

The Challenge

Soil toxicity assays are usually based on the soil exposure to test organisms to determine survival or inhibition of reproduction. In the avoidance test the quality of a contaminated soil is determined by the degree of avoidance that the suspected soil causes to the test organisms. One of the R&D activities at CRIT (Research Center in Toxicology) deals with new methods to assess the quality of potentially contaminated soils. The goal is to develop a portable avoidance test using organisms that can be kept in latent form, and reconstituted on demand to perform the soil avoidance test. Once developed, the assay kit can be easily used to obtain results related to the environmental quality of a suspected soil, without the need for a complex laboratory facility to maintain and keep a supply of test organisms ready for the test.

The Technology

We have studied different methods to be able to obtain Collembola of the species *Folsomia Candida* (or their eggs), in such a form that allow to have a supply of test organisms (or their eggs) in a latent form, in such a way that they can be used at will, when there is the need to perform a soil toxicity test. The latent eggs would ensure the availability of test organisms when needed. After reconstitution, the eggs will hatch providing enough number of organisms to run the avoidance test following recently published international standards.

Innovative advantages

- The COLTOX kit will be used to perform the avoidance test to assess the environmental quality of a suspected contaminated soil, avoiding the need to maintain a normalized culture of test organisms.
- The avoidance test provides results in a timeframe shorter than most standardized soil toxicity assays.
- Results are reliable, inexpensive in terms of time (between 2 and 48 hrs) and resources (no need to maintain test organisms in continuous culture), and the assay can be used as screening tool for the evaluation of contaminated sites, or to verify the efficacy of remediation technologies .

Current stage of development

Currently our project is at the latest stages of development, refining the methodology and results validation.

Applications and Target Market

The COLTOX kit is a Soil Toxicity test kit addressed to assay laboratories, administrations, regulatory and inspection agencies, soil engineers and professional consultants interested in the study of soil and control of soil contamination or remediation technologies.

Reference number

MKT2012/0135_E

COLTOX Kit A new soil toxicity test kit



Collembola species are used to perform the tests



Soil remediation
Soil Environmental Quality
Soil Toxicity Assays

Business Opportunity

Technology available for licensing with technical cooperation

Patent Status

Priority application

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