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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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Chemicals -- Soil microorganisms -- Carbon transformation test

化学品 土壤微生物 碳转化试验

(English Translation)

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules.

The Standards and Organisation for Economic Co-operation and Development (OECD) Guidelines for the Testing of Chemicals 217 "Microbial carbon conversion test" (in English) the same technical content.

The editorial changes made the following standards.

--- The original text "INTRODUCTION" and "INITIALCONSIDERATIONS" incorporated as introduction of this standard;

--- Increasing the scope;

--- The original text "DEFINITIONS" contents as standard "Terms and Definitions";

--- A unit of measurement unity to our legal units of measurement;

This standard is managed by the National Standardization Technical Committee chemicals dangerous (SAC/TC251) and focal points.

This standard was drafted. CIQ Hubei, Guangdong Province, microbiological analysis Testing Center, Ministry of Environmental Protection Chemical Registry Center, Chinese Academy of Inspection and Quarantine.

Introduction

This test method is to study the potential impact of long-term individual chemicals microbial biomass conversion activity generated on the design. The test Test methods and test methods of the European Mediterranean Plant Protection Organization have recommended

[1], based on the same time reference is made to the German Federal Biological Research the [2], the United States Environmental Protection Agency [3], Society of Environmental Toxicology and Chemistry and test methods for the International Organization for Standardization [4]. In 1995, the Economic Cooperation and Development Development Organization soil/sediment Working Group held a meeting in Italy Bell Gila too [5], officially identified by the use of this test soil class Type and quantity. Recommendations Soil samples were collected, processing, storage, etc. See ISO guidance document and the Giralda Bell too working group [6].

When the test was conducted to assess the toxicity characteristic, for example, the need to obtain data about the side effects of crop protection agents on soil microflora when, or to reveal the role of soil microbes in contact with other chemicals other than agricultural chemicals may occur, we need to determine chemicals Soil microbial activity. Carbon transformation test is this against the effects of chemicals on soil microbial flora. If the test substance of agricultural chemicals (such as pesticides, fertilizers, forestry chemicals), the nitrogen transformation and carbon transformation test all done. If the test substance is not farming Chemicals, just to make the nitrogen transformation test. However, during the test, if nitrogen is converted EC50 values \u200b\u200bfound in the commercial nitrification inhibitor (For example, 2-chloro-6-trichloromethyl pyridine) within the range of carbon transformation test should be performed in order to obtain further information.

Soil is composed of complex, heterogeneous biological and non-biological complex. The organism of fertile soil organic matter of minutes Solutions and transformation plays a very important role, and the combined effect of different species can also have a significant impact on all aspects of soil fertility.

These biochemical processes in any long-term changes that could potentially interfere with the nitrogen cycle, thus changing the soil fertility. Transformation of carbon and nitrogen occurs in all the fertile soil. Although the action of the microbial population of these processes due to soil types vary, but the way it transformed it is basically the same.

This test method is used to detect long-term adverse effects on the soil surface of a substance under aerobic conditions to carbon conversion process. Test the intake the number of rows of carbon transfer and alter the activity of microbial communities are very sensitive, because the effects of chemical stress and carbon communities affected by stress. Sandy loam Organic matter content is low, they have been adopted. Soil sample was subjected to treatment, and allow rapid microbial metabolism under culture conditions.

Under this condition, the soil organic carbon available degrade rapidly, resulting in a lack of organic carbon, microbial cells and lead to sleep hungry or produce spores. If the trial is over 28d, the sum of these reactions in (untreated soil) controls as a new generation of Chan Xie form of microbial biomass activity loss is measured [7]. If the test conditions, the stress of carbon in the soil biomass affected by chemicals it may not be restored to the same level with the control group. Therefore, the test substance during the test at any time

subject to interference often continue to End of the trial.

This test method is mainly used for environmental concentrations in soil content of known substances. For example, the use of pesticides in soil application amount is known.

For agrochemicals, just two doses measured concentration (the concentration expected or predicted application rate related). It can be used as agricultural chemicals Active ingredient (ai) or as preparations were measured. However, the test applies not only to chemicals with known ambient concentrations, through Changing the way applied to the soil and the amount of test substance data evaluation, this test also applies to the soil in the unknown concentration of chemicals.

Thus, for non-agricultural chemicals, you can use this method to determine the effect of different concentrations of carbon conversion. Test results can be used to draw the dose -Response curve and used to calculate the soil cause the carbon conversion percentage of inhibition of the test substance concentration of x% when (the ECx) values, where x is the carbon transfer the percentage of inhibition.

Chemicals Microbial carbon transformation test

1 Scope

This standard specifies the test methods for single chemical potential long-term impact of microbial biomass conversion activity generated by the pair.

This standard applies to testing drugs for toxicity characteristics evaluated for carbon transformation test is the impact of chemicals on soil microbial flora.

2 Terms, definitions and abbreviations

The following terms, definitions and abbreviations apply to this document.

2.1 Terms and Definitions

2.1.1

Carbon conversion carbon transformation by microbial degradation of the organic material to form the final inorganic carbon dioxide.

2.2 Acronyms

ECx cause soil carbon conversion percentage inhibition test concentration of x% of the time (effective concentration) EC50 in soil carbon transformation test inhibition concentration (median effective concentration) percentage of 50%

3 Effectiveness trials

Agrochemicals based on the test results of the evaluation and control of soil carbon dioxide or oxygen consumption through soil samples treated released the difference, this kind of difference is relatively small (mean $\pm$ 25%), and therefore, a larger difference in the control group will lead to erroneous results. Therefore, control the difference between duplicate samples should be less than $\pm$ 15%.

Principle 4

Easy to use pre-prepared soil or soil test substance treated untreated controls. If the test substance is agrochemicals, recommend at least Two concentrations tested, including the lowest test concentration should be expected in a field related to the administration of the maximum concentration. Culture 0d, 7d, 14d, 28d After mixing soil samples treated and control of glucose, and then continuously measuring respiration rate within 12h caused by glucose. Respiration rate to the release of carbon dioxide [carbon (mg)/soil (kg $\cdot$ h)] or oxygen consumption [oxygen (mg)/soil (kg $\cdot$ h)] to represent. The treated soil the average respiratory rate were compared with a control sample, and control based on the calculated average percentage of soil respiration rate differences.

All the tests for at least 28d. If the difference in treatment between the soil and untreated soil in the first 28 days is equal to or greater than 25%, places 14d to continue testing intervals, up to 100d. If the test substance is non-agricultural chemicals, you need to use a range of concentrations of the test substance is applied to the soil Soil samples and measuring the glucose-induced respiration rate in 28d after (that is, the average carbon dioxide formed or oxygen consumption). With regression Method of test results obtained in a series of concentrations are analyzed, and calculate ECx values, ie EC50, EC25, or EC10.

5 Test device

Test vessel required inert material. Use soil cultivation methods used to match the appropriate capacity, that is the whole or a series of