

Colorimetric Parameters Modeling of Test Micro-Ecosystems for Lands Pollution Remote Sensing

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ABSTRACT

The paper describes a methodology of determining the toxicity sources, using bioassay based on the wildlife objects that change their colorimetric parameters under the influence of toxic factors. The work explores the dynamism of the colorimetric attributes associated with plant pigments. It can be determined by computer processing of the data obtained from digital remote sensing of the lands affected by toxic pollution by means of such relatively low-cost and straightforward methods as digital photography from an aircraft or a drone. The results obtained do not allow direct measurements but rather serve as a basis for the development and characterization of new biomarkers.

Keywords: pollution, system dynamics, colorimetric parameters, remote sensing.

INTRODUCTION

The toxicity of a surface run-off from the lands with man-made and settlement objects in many cases can become a source of various threats to biosafety. Urbanization of the modern world increases the likelihood of emerging sources of such threats in vast areas not entirely accessible for contact sensing. The use of digital photography from an aircraft provides the abilities for the implementation of these sources' detection.

Pollution of the natural environment, for example, during hydrocarbon field exploitation, is related to various stages of the technological processes of oil and gas production and processing. The greatest danger of penetrating toxicants into natural landscapes arises during drilling of wells, transportation of extracted fluids, and exploitation of deep disposal and water dump wells in emergencies. All the components of landscapes, from plants to groundwater, are being polluted. The most significant load is imposed by the soils lying

