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## Ecology, Environment and Conservation Paper

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### **PUBLIC SPACE OF SURAKARTA PALACE SQUARE AS A SACRED AND PROFANE ARCHITECTURAL MEANING**

Imam Santoso, Bambang Setioko, **Edward Endrianto Pandelaki** and Atiek Soeprapti

#### **Abstract**

One of the parts of Javanese palace which is integrated and inseparable is the square. Surakarta Palace complex owns two squares, namely Alun-alun Lor and Alun-alun Kidul. The existence of the square as part of the spatial structure in Surakarta palace complex becomes the philosophical axis of Sangkanparaningdumadi, which has a transcendental meaning related to human life. This philosophy denotes that human beings must always take into account where they were originated from and where they will end. In Javanese spiritual understanding, the north (lor) and south (kidul) represent the powers of the afterlife. The north represents heaven and the south represents hell. They also represent an imaginary straight line to the south coast as well as a spatial structure pattern influenced by the cosmological concept of Javanese Hindu society. In the past, the space in Alun-Alun Kidul was closed, had high privatization, and served as a place for rituals of silence and contemplation of the king. The method utilized in this study is a phenomenological descriptive approach, referring to grounded theory that does not apply the term population but emphasizes more on social situations consisting of four elements, namely place, activity, person (actor), and time. The results of the study indicated the existence of public space's sacred-profane meaning in space transformation of Surakarta Palace Square. The sacred-profane space includes: sub-concept, nature of space, and concept category. Space is utilized for activities according to its spatiality and time. And, the physical order pattern remains in a fixed form with slight changes in the meaning of space function and behavior.

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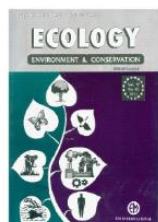
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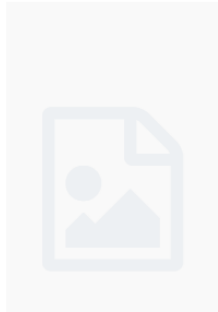
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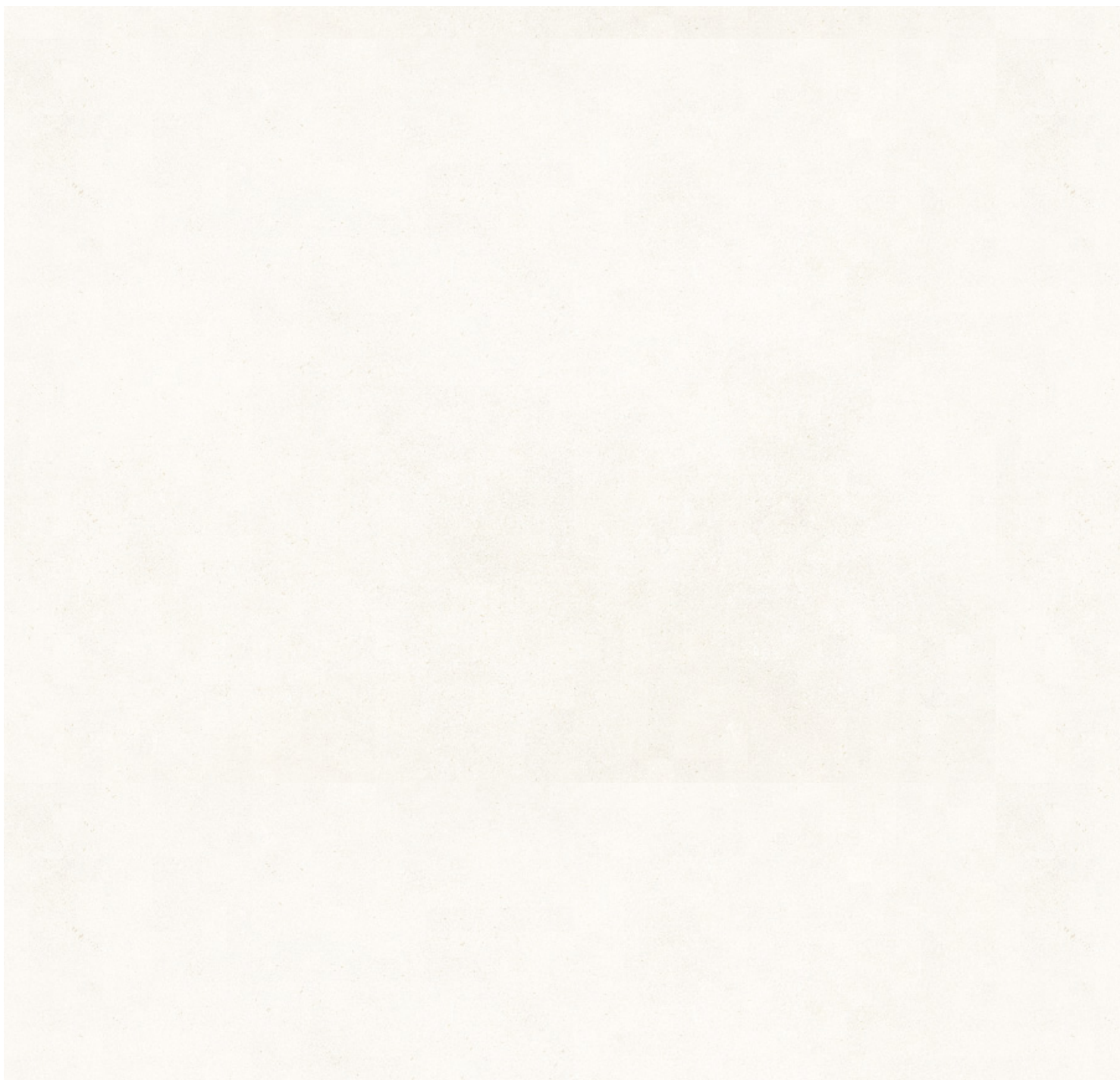
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### WATER ASSOCIATED WITH GAS PRODUCTION AT RISHA GAS FIELD

Abdulrahman Qteishat, Mehaysen A. Mahasneh and Hussam E. Alkhasawneh

# Available UV Killing *Escherichia coli* in oxidation ponds for community wastewater treatment

Thanit Pattamapitoon<sup>1</sup>, Watcharapong Wararam<sup>1\*</sup>, Pavin Wichittrakarn<sup>2</sup> and Charinthip Soeihom<sup>2</sup>

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(Received 8 Novemebr, 2020; Accepted 24 December, 2020)

## ABSTRACT

The available ultraviolet radiation (UV) to kill *Escherichia coli* (*E.coli*) was studied in oxidation pond of wastewater treatment system under the Royal Initiated Laem Phak Bia Environmental Research and Development Project (Royal LERD Project), Ban Laem district, Phetchaburi province, Thailand. The available UV radiation were found in 0-750 W/m<sup>2</sup> range within 12 hours (06.00-18.00 o'clock). Hydraulic retention time (HRT) as 37 days was found 97.0% *E.coli* reduction efficiency. Amount of *E.coli* was significantly decreased  $2.0 \times 10^3$  to  $2.2 \times 10^2$  CFU/ml from sedimentation pond 1 to oxidation pond 2. On the other hand, there was no significant decreased from oxidation pond 2 to oxidation pond 3. The radiolysis process in term of hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) concentration were 1.9 and 2.2 µg/L in oxidation pond 2 and 3, respectively. H<sub>2</sub>O<sub>2</sub> can damage *E. coli* cell membrane and DNA. Therefore, it could be concluded that available UV radiation was the most important factor to reduce *E. coli* in oxidation pond of wastewater treatment.

**Key words :** Ultraviolet radiation, *E. coli*, Oxidation pond, Wastewater treatment

## Introduction

Community wastewater typically contains *Escherichia coli* (*E.coli*) which presents public health hazard in human. Although the advanced biological wastewater treatment technology such as, activated sludge system (AS), rotating biological contactor system (RBC) and upflow anaerobic sludge blanket (UASB) can remove *E. coli* by chlorine usage at the end of wastewater treatment system. Chlorination is a traditional chemical substance for *E.coli* killing in community wastewater but it's very expensive and difficult to control wastewater treatment system. In fact, most of the local wastewater treatments in Thailand were oxidation pond system, a low cost and easy to operate but high BOD removal effi-

ciency, that *E.coli* was killed by ultraviolet radiation (Hamouri *et al.*, 1994).

Ultraviolet radiation (UV) emitted from the sun, represent in the UV-A (315-400 nm.), UV-B (280-315 nm.) and UV-C (200-280 nm.) bands. The ozone layer in stratosphere can absorb most of UV-C and some of UV-B. So, the radiations that reach the earth's surface are UV-A and some of UV-B. They are important for producers and important for *E. coli* killing in oxidation pond treatment system. UV-A and UV-B play an important role in hydrogen peroxide production. Hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) *E. coli* cell membrane and DNA damage substance, were produced by water molecule and dissolved oxygen in wastewater via radiolysis process (Davies *et al.*, 1997; Asad *et al.*, 1998). The efficiency of UV killing



# Landslides Incidents in Federal Territory of Kuala Lumpur, Malaysia

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(Received 13 October, 2020; Accepted 26 December, 2020)

## ABSTRACT

A landslide can be defined as a geohazard incident involving most of the movement of soil surfaces, rock falls or a combination of both movements resulting from gravity attraction. The initial definition of a landslide was recorded by James Dwight Fund in 1862, where landslide is classified into three types, which are now known as flowing debris, land spread, and rock slides. Overgrowing urbanisation has become one of the major contributors to landslides for years. Malaysia is one of the most developed nations that has undergone rapid development since the 1970's, resulting in a higher frequency of landslide activity. When developments and urbanisations continue to overgrow, landslide failures and other effects of soil gesture failures will also rise significantly. Hence, a study is conducted to identify the number of landslides in Kuala Lumpur areas from 2010 to 2020. There were 50 cases of landslide collected across Kuala Lumpur over these ten years. The GIS software was used in this study to generate the distribution map of the landslide incidents.

**Key words :** Development, Geohazard, GIS, Landslide, Urbanisation

## Introduction

A landslide or also known as slope failure, can be defined as a geohazard incident involving most of the movement of soil surfaces, rock falls or a combination of both movement as a result of gravity attraction (Batterson *et al.*, 1999). Due to gravity, the movement of soil and rock down slopes is called mass wasting whereas the surface movement from the sequel of wind and water is called erosion (Kazmi *et al.*, 2017a). Frankly, landslides have caused thousands of deaths and property damages. The initial definition of a landslide was recorded by James Dwight Fund in 1862, where landslide is classified into three types, which are now known as flowing debris, land spread, and rock slides (Cruden, 2003). Obliquely, landslides can also be defined as a geological phenomenon concerning the

displacement of mass rock and debris (Hossain *et al.*, 2015; Sivakumar and Mukesh, 2009).

On the other hand, overgrowing urbanisation has become one of the major contributors to landslides for years. Malaysia is one of the most developed nations that has undergone rapid development since the 1970's, resulting in a higher frequency of landslide activity. To illustrate, the rate of urbanisation in Malaysia reported by the Department of Statistic Malaysia (2020) shows an increasing percentage in 20 years (2000-2020) apart by 14.4%, especially in Kuala Lumpur. Besides, The Public Works Department (JKR) (2006) also stated that Kuala Lumpur has the highest landslide cases recorded compared to other states caused by the rapid urbanisation. Thus, a relationship between urbanisation and landslide can be seen.

The country has also influenced a high pressure

# Keystone, focal and target species in Ecology, Nature Conservation and Risk Assessment, a sometimes confusing matter of definition

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(Received 7 December, 2020; Accepted 5 February, 2021)

## ABSTRACT

Communicating the results of research to policymakers and the general public becomes more and more important. To this end appealing titles, phrases and terms are used. However, when terms such as keystone, focal and target species are not precisely defined, or can be differently interpreted depending on the societal angle of approach, misinterpretation and confusion can result. This paper discusses the various interpretations and definitions of keystone, umbrella and flagship species in ecology, of target species in nature conservation and biocide assessment, of focal species in ecological risk assessment of pesticides and of threatened species in ecological risk assessment. The type of problems arising are described and a number of improvements are suggested, the most important being: phrase terms as neutral and functional as possible, because catchy terms cause confusion. A proper terminology is also part of scientific integrity. Too overdone or pertinent conclusions could even result in official complaints and social implementation.

**Key words :** Focal species, Target species, Nature conservation, Risk assessment, Definitions

## Introduction

Communication has become essential in present-day ecology, nature management, and ecological risk assessment. Bringing the outcomes of research, policy and assessments across to the general public ask for clear language and easily understandable terminology. This poses a risk, however, that the use of catchy terms causes misinterpretation, in particular when organisations from different perspectives for policy and different aims for communication use the same term. This is relevant for Ecological Risk Assessment (ERA) which combines ecology and environmental toxicology. Especially in the field of risk assessment of pesticides result these different angles of approach now sometimes in the framing of prob-

lems and using terms that emphasize emotional instead of cognitive perspectives and do not reflect the true problem. This paper discusses several terms of which different interpretations may cause confusion and unnecessary debate: keystone, umbrella and flagship species in ecology, target species in nature conservation and biocide assessment, focal species in ecological risk assessment of pesticides, and threatened species in ecological risk assessment. The type of problems arising are shortly described and a number of improvements are suggested.

## Keystone Species in Ecology

The term keystone is coined by Paine (1966) who observed that the removal of a top predator in an estuarine ecosystem caused a series of subsequent

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**RELATIONSHIP BETWEEN LEAD (PB) IN SEDIMENT, SEAWEED AND BRACKISH WATER PONDS IN TEGAL CITY**

# Environment friendly synthesis of ZnO Nanoparticles from Plant Extract

Karrar Hazim and Hassan A. Habeeb Alshamsi\*

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(Received 4 December, 2020; Accepted 28 December, 2020)

## ABSTRACT

This research consisted of the synthesis of nanoparticles and nanostructures, which included, first of all, the preparation of nano and environment friendly zinc oxide, as these oxides were reduced by nitrates and by the use of Spinach leaf extract, where this extract decreases the chemical content of the oxide. Additive compounds and convert these chemical compounds from nanoparticles and nanostructures during reduction, since this environment friendly method is considered safe, non-toxic or hazardous to the environment and is a method that is not costly, simple to prepare and highly effective. And it is possible to monitor the characteristics and properties of the resulting compounds and this process is used in many fields. Secondly, the synthesis, in proportions, and the preparation of the compounds by plant extract and by reduction, via various technologies, X-ray diffraction (XRD), transmission electron microscopy (TEM, these nanostructures have also been diagnosed, examined FT-IR). Particles on the surface of the zinc oxide reduced the structural, morphological and compositional properties of the prepared nanoparticles by the extract of the sespan leaves and the compositions.

**Key words:** Environmentally friendly, *Sesbania grandiflora*, ZnO, Nanoparticles

## Introduction

Green Chemistry focuses on producing ideal products in chemical reaction processes without creating harmful by-products. The integration of the concepts of green chemistry into nanotechnology has led to the identification of multifunctional environmentally friendly reagents that can act as a decreasing agency. Due to their attractive and special properties, ZnO Nanoparticles are synthesized widely (Saif *et al.*, 2016). Due to their superior photocatalytic performance, adequate band gap and photocorrosion stability, ZnO, TiO<sub>2</sub>, SnO<sub>2</sub>, Fe<sub>2</sub>O<sub>3</sub> have been widely used as photocatalysts among many metal oxide semiconductors. In determining its photocatalytic activity, the bandgap energy, size, dispersion and surface area of zinc oxide

nanoparticles, which depend on the synthesis process (Raajshree and Brindha, 2018). Zinc oxide is used in various advanced applications such as electronic connections and sensors. Zinc oxide NPs are primarily used for oxidation dyes and organic inorganic pollutants in the fields of solar radiation conversion and water pollution compounds. It is a form (p) semiconductor compound and has a narrow band gap with a single structure of a slant (Bala, 2015).

## Materials and Methods

### Chemicals

All materials obtained are of the standard of analytical reagents and used without further purification. Sigma-Aldrich purchased zinc (II) nitrate hexahy-



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