

### List of Dissertation Abstract (Risk Management and Environmental Sciences)

Name	Supervisor	Title	Abstract
Makoto HIRAYAMA	Naoya KASAI	Research on physical risk analysis of hydrogen equipment	Hydrogen vehicle fuel dispensers have a relatively large impact on the general public compared to other hydrogen equipment. In this research, the physical risks of hydrogen dispensers were analyzed. The adequacy of existing safety measures was verified and advanced safety measures were proposed. Furthermore, comparative risk study of hydrogen and gasoline dispensers was conducted to provide additional insight for risk communication.

Ageng Sadnowo REPELIANTO	Naoya KASAI	Development of Uniform Eddy Current Probes using Multi Excitation Coils	There are two factors that indicate the effect in increasing the sensitivity of a Uniform eddy current (UEC) probe design. First is the configuration of the excitation coil and the detection coil. It must be developed so that the excitation coil and detection coil produce higher induction current densities and cause an increase in electromotive force in response to flaws. Second is the shape and orientation of the detector coil, to be determined, whether in the shape of a single coil or it is built from two or several coils. The self-differential and self-nulling natures of the detector coil should be considered. The development of a new one-directional UEC probe using multi excitation coils in the pancake orientation can increase the sensitivity of the probe, and it has the characteristics of self-nulling and self-differential.
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Kazuhiko SANO	Hideo OHTANI	Study on cost-effectiveness of capital investment that contributes to the judgment of effectiveness of safety investment in monomer production plants	A study was conducted to prevent fire and explosion accidents at monomer production plants. Study steps related to the cost-effectiveness of safety investments were proposed, and a decision-making process for executing the investments was established. The method was applied to an acrylonitrile plant reactor, and the effectiveness of the method was demonstrated.
Yosuke NISHIWAKI	Mieko KUMASAKI	Degradation of pyrotechnics compositions by water and its hazards	Pyrotechnics have been used in various fields, and performance change of the pyrotechnics which is caused by degradation leads to accidents and other problems. Water is known as one of the causes of degradation. In this study, degradation by water was summarized, and degradation mechanisms of pyrotechnics compositions which are used for fireworks and gas-generating agents were revealed. And the problems of degradation of these compositions were observed. Measures for degradation were proposed from the revealed mechanisms and problems. Additionally, knowledge which is applicable to degradation of various pyrotechnics compositions was obtained from this study.

Binay SANGAT	Fumito KOIKE	Sustainable nitrogen management using weed mulch in no-tillage conservation agriculture system	Conservation agriculture(CA) is one of the sustainable agriculture practices. This thesis is based on no-tillage with the weed management system(NTW), which follows the principles of CA. The distinct characteristic of NTW is the naturally occurring weeds, which are grown together with the crops. Weeds are usually controlled by using herbicides, which harms the crops and as well the environment. However, NTW controls and utilizes weeds as a nitrogen resource by slashing and mulching practice. Hence, using weeds as a nitrogen resource may minimize the need for external input and cost, eventually reducing the N loss from the agriculture lands.
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Mahesh KODOTH	Tadahiro SHIBUTANI	Accident Modelling and Uncertainty Assessment in Risk and Reliability Quantifications to support New Technology System using Bayesian Approach	The overall objective of this Ph.D thesis has been to develop strategies for addressing uncertainties in the risk assessment. It addresses Accident Modelling and Improvement in Risk and Reliability Quantifications based on Probabilistic and Statistical Modelling to support New Process Technology Risk Assessment. The concept of the research aims at addressing uncertainties in risk and accident modelling by using dynamic bayesian based assessment.
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