

POLUSI RADIOAKTIF LINGKUNGAN PLTN

Pendekatan di luar pertahanan berlapis

Intisari

PLTN menimbulkan dilema lingkungan karena memiliki keunggulan ketika beroperasi normal dan berpotensi menimbulkan bencana ketika mengalami kecelakaan. Pendekatan pertahanan berlapis yang digunakan selama ini tidak sepenuhnya bisa mengatasi potensi buruk tersebut. Penelitian dilakukan untuk mendapatkan gagasan tentang pendekatan baru dalam sudut pandang lingkungan yang berpotensi mengatasi potensi buruk tersebut.

Metode etnografis digunakan dalam penelitian ini dengan menggunakan dokumen-dokumen standar keselamatan, teknis dan laporan yang diterbitkan oleh IAEA, U.S. NRC, OECD-NEA, serta artikel-artikel penelitian tentang konsep pertahanan berlapis, dampak buruk lingkungan akibat kecelakaan PLTN dan upaya pencegahan serta remediasinya.

Hasil yang diperoleh menunjukkan bahwa teknologi PLTN telah berupaya untuk melindungi manusia dan lingkungan dari bahaya potensial radiasi pengion melalui pendekatan pertahanan berlapis yang berada di dalam paradigma perlindungan dan keselamatan, tetapi lebih menekankan pada keselamatan manusia sehingga belum sepenuhnya bisa melindungi lingkungan. Disiplin polusi lingkungan memiliki konsep kontinum lingkungan. Premis yang diajukan adalah mempertahankan kelestarian jasa-jasa lingkungan melalui pengendalian polutan dalam kapasitas asimilasinya. Premis kontinum lingkungan dengan kapasitas asimilasinya berpotensi menjadi besaran lingkungan yang bekerja pada teknologi PLTN, sedemikian rupa sehingga menghilangkan potensinya untuk menimbulkan bencana lingkungan. Konsep pengetahuan polusi radioaktif lingkungan PLTN berbasis kontinum lingkungan berpotensi untuk dikembangkan pada disiplin lingkungan.

Kata kunci: PLTN, lingkungan, bencana, kontinum, perlindungan

ENVIRONMENTAL RADIOACTIVE POLLUTION OF THE NPP

Approach beyond defense in depth

Abstract

NPPs pose an environmental dilemma because they had advantages when operating normally and also the potential to cause disaster when an accident occurred. The defense in depth approach that had been used so far had not fully overcome this potential. The research was conducted to get ideas about new approaches from an environmental point of view that had the potential to overcome these negative potentials.

The ethnographic method was used in this study using documents of safety standard, technical reports and reports published by the IAEA, U.S. NRC, OECD-NEA, as well as research articles on the concept of defense in depth, environmental adverse impacts due to nuclear power plant accidents and their prevention and remediation efforts.

The results obtained indicated that NPP technology had attempted to protect humans and the environment from the potential dangers of ionizing radiation through a defense in depth approach that was within the protection and safety paradigm, but emphasizes human safety so that it could not fully protect the environment. The environmental pollution discipline had the concept of an environmental continuum. The proposed premise was to maintain the sustainability of environmental services through controlling pollutants in their assimilation capacity. The premise of the environmental continuum with its assimilation capacity had the potential to become an environmental parameter that works on NPP technology, in such a way that it eliminated its potential to cause environmental disasters. The knowledge concept of environmental continuum-based nuclear power plant radioactive pollution had the potential to be developed in environmental disciplines.

Keywords: nuclear power plant, environment, disaster, continuum, protection