Tritium Exit Sign Survey Methodology

The Church of Jesus Christ of Latter-day Saints
Risk Management Division
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Background

- The Nuclear Regulatory Commission (NRC) issued a Demand for Information to the Church of Jesus Christ of Latter-day Saints on January 16, 2009 requesting information and reporting damaged tritium exit signs containing radioactive material.
- A response to the demand was sent to the NRC on February 10, 2009 requesting an extension of the 60-day deadline and additionally requesting certain requirements of the demand be relaxed or extended. The letter proposed that the LDS Church conduct research to determine any potential problems with lost, or unaccounted for signs.
- The LDS Church has been purchasing tritium exit signs since approximately 1980 for use in meetinghouses and other facilities. Signs have been placed in the range of 3,000 to 5,000 buildings throughout the US. The LDS Church does not have a specific inventory of tritium exit signs. Facilities managers have been instructed on health risks associated with tritium exit sign, what to do if a sign is broken or damaged, and how to properly dispose of signs. A fact sheet on tritium exit sign management is posted in the LDS Church Risk Management document library.

Proposal

- The NRC provided a database with records from companies manufacturing tritium exit signs for 8,835 signs purchased by the LDS Church. The LDS Church was able to match 6,269 of these signs with a specific address. It is proposed that the LDS Church survey these signs using statistical sampling theory. The sample will have a confidence level[1] of 99% with a confidence interval[2] of ± 5%. The calculated sample size is 602 tritium exit signs using a stratified random sample of the 6,269 matched signs. The stratified sample will be distributed geographically. All signs at a selected geographic location will be sampled. A report will be provided to the NRC indicating the ratio of signs found and an explanation for any lost or unaccounted for signs. This survey can be completed in approximately 60 days.
- FMAT (Facilities Management Automated Tools) is the web-based tool for supporting LDS Church Physical Facilities processes worldwide. FMAT currently includes exit signs as part of each building's inventory but does not identify if the signs are tritium signs. Facility managers validate the building inventory on an annual basis. It is proposed that an inventory field be placed in FMAT to identify tritium exit signs and the recommended replacement date for each sign. Annual inventory inspections are already in process this year. The tritium exit sign inventory can be updated in next year's inspection cycle and completed in approximately 18 months.
- It is proposed that the fact sheet for tritium exit signs be distributed to Facility Managers with other training materials to assure that signs are properly managed.

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[1] The **confidence level** tells you how sure you can be. It is expressed as a percentage and represents how often the true percentage of the population who would pick an answer lies within the confidence interval. The 95% confidence level means you can be 95% certain; the 99% confidence level means you can be 99% certain.

[2] The **confidence interval** is the plus-or-minus figure usually reported in newspaper or television opinion poll results. For example, if you use a confidence interval of 4 and 47% percent of your sample picks an answer you can be "sure" that if you had asked the question of the entire relevant population between 43% (47-4) and 51% (47+4) would have picked that answer.