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5/8/92*



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

~~MAYO 1 1992~~ 17 May 1992
SWB

MEMORANDUM FOR: Susan Greene, Licensing Reviewer
Commercial Section
Medical, Academic, and Commercial
Use Safety Branch

FROM: Sterling W. Bell
Sealed Source Safety Section
Source Containment and
Devices Branch

SUBJECT: LICENSING ACTION FOR KIDDE FENWAL, INC.

We have completed the SSD review and issued a amended registration certificate No. NR-668-D-101-E dated April 27, 1992, for Kidde-Fenwal, Inc. All background material submitted to us is being returned to you so that you may compete the licensing action. If you have any questions, please contact me at 504-2617.

Sterling W Bell

Sterling W. Bell
Sealed Source Safety Section
Source Containment and
Devices Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

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REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE
(AMENDED IN ITS ENTIRETY)

NO: NR-668-D-101-E

DATE: APR 27 1992

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DEVICE TYPE: Ion Chamber

MODEL: CPD 702X Series, CPD 704X Series and CPD 705X Series (The X in each Series represents a future number to be assigned as new models are developed.)

MANUFACTURER/DISTRIBUTOR:

Kidde - Fenwal, Inc.
400 Main Street
Ashland, MA 01721

MANUFACTURER:

Nohmi Bosai Ltd.
7-3 Kudan Minami, 4-Chome
Chiyoda-bu Tokyo 102, Japan

SOURCE MODEL DESIGNATION:

Amersham Models AMM1001, AMM 1001D, and
AMM 1001 H
Nuclear Radiation Development Models A001,
A100.

ISOTOPE:

Americium-241

MAXIMUM ACTIVITY:

1.5 microcuries

LEAK TEST FREQUENCY: Not required

PRINCIPAL USE: (P) Ion Chamber Smoke Detector

CUSTOM DEVICE:

 YES

 X NO

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DEVICE TYPE: Ion Chamber

DESCRIPTION:

The Kidde-Fenwal, Inc. Series CPD 702X and CPD 704X are dual chamber ionization type detectors that are designed to detect incipient fires by responding to the products of combustion produced by thermal decomposition of building materials or contents prior to the appearance of visible smoke, flame or appreciable heat. The smoke detectors are designed primarily for industrial use. Both the CDP 702X and 704X series smoke detectors are identical with the exception of differences in the electronic circuitry. Each foil contains not more than 1.5 microcuries of Americium-241. The foils are contained in a stainless steel source holder and are secured to a source assembly holder by using brass eyelets. The source assembly holder is secured to the stainless steel smoke chamber by means of individual tabs which snap fit into recesses in the smoke chamber. A stainless steel reference chamber serves as the top of the chamber assembly and is secured by tabs which are bent over to engage the source assembly holder. The ionization chamber assembly is attached to the printed circuit board by stainless steel tabs that are pushed through the printed circuit board and bent or twisted to secure the ion chamber. The entire assembly is secured inside a plastic outer cover. In order to gain access to the smoke detector foils it would require the use of special tools and considerable force and effort.

The Kidde-Fenwal CPD 705X series smoke detectors are completely manufactured in Japan by Nohmi Bosa Ltd. The source assembly is the source foil (Amersham AMM 1001) mounted to a 300 series stainless steel plate and is champed by a 300 series stainless steel source cover which has three integrally formed tabs which are mechanically folded over the back of the source plate and source cover. A threaded stud which is part of and located beneath the source plate is then passed through the polycarbonate support plate and the printed circuit board and secured with a washer - lock nut thus forming secondary and tertiary protection above the source assembly.

NB: On all the above named series the "X" denotes variations of a basic model that are minor changes, such as electronic circuit changes, sensitivity range changers. These minor changes will be shown in the series by replacing the "X" by a single digit. ie., CPD 7051, CPD 7052 etc. In the case of the CPD 705X series, the source and ion chamber design will not be changed, and the safety characteristics of all models in the series will be the same as described for the basic model. Also, both series CPD 702X and CPD 704X share the same source and ion chamber design. Kidde-Fenwal created two new series because of the need to maintain certain old model numbers in the market place.

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DEVICE TYPE: Ion Chamber

REFERENCE:

- ° This registry sheet was originally compiled from information contained in License No. 20-15285-02E.
- ° Kidde-Fenwal, Inc.'s letter dated November 27, 1991, with enclosures thereto.
- ° Kidde-Fenwal, Inc.'s letter dated December 13, 1991.
- ° Kidde-Fenwal, Inc.'s letter dated April 1, 1992, with enclosures thereto.

ISSUING AGENCY:

U. S. NUCLEAR REGULATORY COMMISSION

DATE: APR 27 1992

REVIEWER: Stacy W Bill

DATE: APR 27 1992

CONCURRENCE: Stacy W Bill

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SAFETY EVALUATION OF DEVICE

NO: NR-668-D-101-E

DATE:

JUN 14 1983

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DEVICE TYPE: Ion Chamber

MODEL: CPD-7020, CPD-7021, CPD-7010, CPD-7011, CPD-1201 A-30, CPD-1212 A-SO

MANUFACTURER/DISTRIBUTOR:

Walter Kidde & Company, Inc.
Fenwal Division
400 Main Street
Ashland, MA 01721

MANUFACTURER/DISTRIBUTOR:

SEALED SOURCE MODEL DESIGNATION:

EAD Metallurgical Models AMX-2121 and AMX-1100
Amersham Searle Models AMM.1001, AMN.1001H
Nuclear Radiation Development Models A001, A100*

ISOTOPE: Americium-241

MAXIMUM ACTIVITY: 6 microcuries (AMM.1001, A001
AMX-1100)
2.42 microcuries (AMM.1001 H,
A1008, AMX-2101)

LEAK TEST FREQUENCY: Not required

PRINCIPAL USE: (P) Ion Chamber Smoke Detector

CUSTOM DEVICE: YES NO

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DEVICE TYPE: Ion Chamber

DESCRIPTION:

The Fenwal Division Models CPD-7010 and CPD-7011 are dual chamber ionization type detectors that are designed to detect incipient fires by responding to the products of combustion produced by thermal decomposition of building materials or contents prior to the appearance of visible smoke, flame or appreciable heat. The smoke detectors are designed primarily for industrial use. The Fenwal Division Models CPD-7010 and CPD-7011 smoke detectors are identical with the exception of slight differences in the electronic circuitry.

Two EAD Metallurgical Models AMX-2111 or AMX-2121 foils are used in the smoke detectors. Each foil contains approximately 2.2 microcuries of Americium-241. The two foils contained in a stainless steel source holder are secured to a source assembly holder by using brass eyelets. The source assembly holder is secured to the stainless steel smoke chamber by means of individual tabs which snap fit into recesses in the smoke chamber. A stainless steel reference chamber serves as the top of the chamber assembly and is secured by tabs which are bent over to engage the source assembly holder. The ionization chamber assembly is attached to the printed circuit board by stainless steel tabs that are pushed through the printed circuit board and bent or twisted to secure the ion chamber. The entire assembly is secured inside a plastic outer cover. In order to gain access to the smoke detector foils it would require the use of special tools and considerable force and effort.

LABELING:

Each unit is labeled to include the manufacturer and their address, caution radioactive materials, activity, isotope, the foil symbol, and a note: Return to Fenwal, Inc. for service or disposal.

CONDITIONS OF NORMAL USE:

The detectors will normally be ceiling or wall mounted. The expected useful life of the detectors is 15 years. The detectors have not been designed for residential use.

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DEVICE TYPE: Ion Chamber

PROTOTYPE TESTING:

The units have been tested to demonstrate their effectiveness of the containment and shielding under both normal and severe conditions of handling, storage, use and disposal.

EXTERNAL RADIATION LEVELS:

The information submitted by the licensee indicated that the maximum radiation levels emitted by the detector at distances of 5 and 25 centimeters would be less than .02 milliroentgens/hr.

Thus, based on available information concerning handling, storage, installation, servicing and use of these detectors, it would appear that doses to personnel involved in these operations could only be a small fraction of the doses specified in Column I of the table in Section 32.28 of 10 CFR Part 32.

It was further determined that, based on data submitted by Fenwal Division in conditions of abnormal use, no individual would be likely to receive doses in excess of the permissible doses of 0.5 rem and 15 rem specified in Columns II and III of the table in Section 32.28 of 10 CFR Part 32.

SAFETY ANALYSIS SUMMARY:

We have reviewed the data and information submitted by Walter Kidde and Company, Fenwal Division, and conclude that Walter Kidde and Company has submitted sufficient information relating to the design, manufacture, prototype testing, quality control, and conditions of handling, storage, use, and disposal of their gas and aerosol detector to demonstrate that the product will meet the safety criteria set forth in Section 32.27 of 10 CFR Part 32.

It is further concluded from our review that the external radiation dose or the dose commitment resulting from the intake of radioactive material from the detector will not exceed the doses specified in Column I of the table in Section 32.28 of 10 CFR Part 32, under the conditions of normal use, handling, storage, or disposal. Finally, it is concluded that the probability is low that the containment, shielding, or other safety features of the product would fail under such circumstances, that a person will receive an external radiation dose or dose commitment in excess of the dose to the appropriate organ specified in Column III of the table in Section 32.28.

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DEVICE TYPE: Ion Chamber

REFERENCES:

This registry sheet was compiled from information contained in License No. 20-15285-02E. This enables the information to be placed within the Automated Sealed Source and Device Registry System Management Program.

ISSUING AGENCY:

U.S. Nuclear Regulatory Commission

Date: JUN 14 1983

Reviewer: 

Date: JUN 14 1983

Concurrence: 