

## Summary

### An Investigation of Radioactivity Measurement of Medical Radioactive Waste

Kiyoshi KOIZUMI\*<sup>1</sup>, Kazutaka MASUDA\*<sup>2</sup>, Kiyoko KUSAKABE\*<sup>3</sup>, Fujimi KINOSHITA\*<sup>4</sup>,  
Kazumi KOBAYASHI\*<sup>5</sup>, Tetsuo YAMAMOTO\*<sup>6</sup>, Shinichi KANAYA\*<sup>3</sup>, Tetsuo KIDA\*<sup>2</sup>,  
Masamichi YANAGISAWA\*<sup>7</sup>, Tetsuo IWANAGA\*<sup>8</sup>, Hideharu IKEBUCHI\*<sup>8</sup>,  
Keiji KUSAMA\*<sup>8</sup>, Nobuo NAMIKI\*<sup>9</sup>, Hiroshi OKUMA\*<sup>9</sup>, Yoko FUJIMURA\*<sup>9</sup>,  
Akiko HORIKOSHI\*<sup>9</sup> and Mamoru TANAKA\*<sup>10</sup>

*\*<sup>1</sup>Tokyo Medical University Hachioji Medical Center, \*<sup>2</sup>Shiga Medical University,*

*\*<sup>3</sup>Tokyo Women's Medical University, \*<sup>4</sup>Chiba Cancer Center, \*<sup>5</sup>National Saitama Hospital,*

*\*<sup>6</sup>Kashiwado Memorial Foundation, \*<sup>7</sup>Chiba Cardiovascular Center, \*<sup>8</sup>Japan Radioisotope Association,*

*\*<sup>9</sup>Nihon Medi-Physics Co., Ltd., and \*<sup>10</sup>Aloka Co., Ltd.*

To explore the possibility of which medical radioactive wastes could be disposed as general wastes after keeping them a certain period of time and confirming that their radioactivity reach a background level (BGL), we made a survey of these wastes in several nuclear medicine facilities. The radioactive wastes were collected for one week, packed in a box according to its half-life, and measured its radioactivity by scintillation survey meter with time. Some wastes could reach a BGL within 10 times of half-life, but 19% of the short half-life group (group 1) including <sup>99m</sup>Tc and <sup>123</sup>I, and 8% of the middle half-life group

(group 2) including <sup>67</sup>Ga, <sup>111</sup>In, and <sup>201</sup>Tl did not reach a BGL within 20 times of half-life. A reason for delaying the time of reaching a BGL might be partially attributed to high initial radiation dose rate or heavy package weight. However, mixing with the nuclides of longer half-life was estimated to be the biggest factor affecting this result. When disposing medical radioactive wastes as general wastes, it is necessary to avoid mixing with radionuclide of longer half-life and confirm that it reaches a BGL by actual measurement.

**Key words:** Radioactive waste, Clearance level, Background level, Half-life.