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Field Measurement of Indoor Air Quality in Newly Constructed Houses according to the Revised Building Standard Law in Japan II. Field measurement of concentration of VOCs in indoor air

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Abstract: Our previous paper reported the results of carbonyl compounds air concentration in newly built wooden houses in 2004, consisting of 20 living rooms and bedrooms of 10 houses of natural type which is furnished with natural materials, such as solid wood floors and wall panels, and 18 rooms of 9 houses of general type which is furnished with artificial materials such as bonded wood materials for floor and polyvinyl covering for walls and ceilings, according to the revised Building Standard Law in Shizuoka and Aichi prefectures. In this paper we report the results of VOCs air concentration measurements. Toluene, styrene, xylene, p-dichlorobenzene, ethylbenzene and tetradecane were detected as guideline substances for indoor air quality of the Ministry of Health, Labour and Welfare of Japan. Toluene air concentration averaged $138\mu\text{g}/\text{m}^3$, and the concentration of about 11% of all rooms was over the guideline value ($260\mu\text{g}/\text{m}^3$). Toluene concentration in general type rooms was higher than in natural type rooms. Styrene air concentration averaged $97\mu\text{g}/\text{m}^3$, and the concentration of about 11% of all rooms was over the guideline value ($220\mu\text{g}/\text{m}^3$). Styrene concentration in general type rooms was higher than in natural type rooms. In addition, for general type houses, its concentration in bedrooms was higher than in living rooms. Air concentrations of the other four substances were low compared to the guideline values. The most abundant

emission substances found in natural type houses were terpenoids. In addition, the concentration of substances other than terpenoids in natural type houses was lower than in general type houses. Furthermore, it was shown that for emission substances except terpenoids, low emission was found for the natural materials.

Keywords: indoor air quality, VOC, Building Standard Law, wooden house, terpenoid

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