

集合住宅における空気環境改善のための ホルムアルデヒド・VOC・SVOC測定に関する考察

溝口 忠^{1,3)}, 堀 雅宏²⁾

¹⁾横浜国立大学大学院 環境情報学府 環境リスクマネジメント専攻

²⁾横浜国立大学 教育人間科学部

^{1,2)}〒240-8501 神奈川県横浜市保土ヶ谷区常盤台79-2

Study on measurement of formaldehyde, VOC, and SVOC for IAQ improvement in apartment houses

Tadashi MIZOGUCHI¹⁾ and Masahiro HORI²⁾

¹⁾Graduate School of Environment and Sciences, Yokohama National University

²⁾Faculty of Education and Human Sciences, Yokohama National University

^{1,2)}79-2 Tokiwadai, Hodogaya-ku, Yokohama, Kanagawa 240-8501, Japan

要 旨

建築基準法改正前後の新築・既存集合住宅においてホルムアルデヒド・VOC・SVOC濃度の経時変化、気候、換気回数、サンプリング条件との関係をみるために実住宅で測定するとともに、実験用住宅における測定結果と合わせて、室内環境改善に資する観点から考察を行った。

ホルムアルデヒドの温湿度特性、VOCについては化学種別の低減特性と木質材料由来の α -ピネン、TVOCの評価法などについて考察するとともに、ホルムアルデヒドのサンプリング条件やSVOCの畳防ダニ剤の使用量削減の提案を行った。換気については既存のサンタリー換気装置の有効性と窓開け換気後のサンプリングタイミングが測定値に及ぼす影響について検討した。また、入居後のホルムアルデヒド濃度を非居住住宅と比較するとともに、高層集合住宅のフロアにおける温熱的条件によるホルムアルデヒド濃度への影響を明らかにした。

Abstract

An investigation of formaldehyde, VOC and SVOC was performed in both new and old apartment houses both before and after revision of Building Standard Law of Japan to examine a relation between them and aging changes, climate, air change rate and sampling condition. These results were considered gather with that in a pilot house from viewpoints which contributes to improvement of indoor air quality. Temperature/humidity characteristics of formaldehyde concentration, concentration decrease characteristics of each VOC species, evaluation of α -Pinene from wood-based materials and an evaluation method of TVOC were considered. Sampling condition of formaldehyde and reduction in amounts of tick pill used for tatami were proposed. Practical characteristics of a sanitary ventilator and the effect of sampling timing after window-shut on the measurement value of concentration were considered. Formaldehyde concentrations in resident houses were compared with that in nonresident house, and the influence to the formaldehyde concentration of the thermal condition was made clear to measure air of the top, middle and first floor in some multistory apartment houses.

Key words: ホルムアルデヒド(formaldehyde), VOC(volatile organic compound), SVOC(semi-volatile organic compound), 空気質改善(IAQ improvement), 換気(ventilation), 測定条件(measurement condition)