The deactivation of V2O5–WO3–TiO2, Cu–HZSM5 and Cu–HMOR plate-type monolithic catalysts was investigated when exposed to KCl aerosols in a bench-scale reactor. Fresh and exposed catalysts were characterized by selective catalytic reduction (SCR) activity measurements, scanning electron microscope–energy dispersive X-ray spectroscopy (SEM–EDX) and NH3-temperature programmed desorption (NH3-TPD). 95% deactivation was observed for the V2O5–WO3–TiO2 catalyst, while the Cu–HZSM5 and Cu–HMOR catalysts deactivated only 58% and 48%, respectively, after 1200 h KCl exposure. SEM analysis of the KCl aerosol exposed catalysts revealed that the potassium salt not only deposited on the catalyst surface, but also penetrated into the catalyst wall. Thus, the K/M ratio (M = V or Cu) was high on V2O5–WO3–TiO2 catalyst and comparatively less on Cu–HZSM5 and Cu–HMOR catalysts. NH3-TPD revealed that the KCl exposed Cu–HZSM5 and Cu–HMOR catalysts only experienced a slight loss of acidity while the V2O5–WO3–TiO2 catalyst lost most of the acidity. High alkali resistivity seems to be characteristic of the zeolite supported SCR catalysts which thus could be attractive for flue gas cleaning in biomass plants.

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