

EFFECT OF COVERAGE BY FATTY ACIDS UPON CHLORINE LOSS FROM ATMOSPHERIC SEA SALT PARTICLES

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Sea salt particles are known as a major emission source of chlorine species in atmospheric air. These react with atmospheric gaseous substances and then generate volatile species such as HCl, Cl₂ and so on. We have determined concentrations of water-soluble ions in aerosol samples and gaseous substances collected at coastal area in Kanagawa, Japan in order to examine behavior of atmospheric sea salt particles. As a result, mole concentration ratios of Cl and Na in aerosol samples tended to decrease with an increase of concentrations of HNO₃. Therefore, we deduced that HNO₃ was one of the dominant factors to the chlorine loss phenomena at the coastal area. Recent report said that surface of the particle were covered by non-volatile organic compounds (fatty acids) and the mass of fatty acids in the atmospheric aerosol were found palmitic(C16) and stearic(C18) acids. Then, the effect of coverage by fatty acids upon chlorine loss from NaCl(solid)-HNO₃(gas) reaction was investigated by laboratory experiments. A loss amount of chlorine from the salt varied with contents of palmitic acid added to NaCl impregnated on a fiber filter. While excess addition of the acid prevented the Cl volatilization, small addition of the acid enhanced the chlorine loss from NaCl by HNO₃. Thus, it is suggested that fatty acids have a possible effect upon a chemistry of atmospheric sea salt particles.