**Formation of Active Chlorine and Disinfection By-products Electrochemically Generate Chlorine Disinfection Device**

**포터블 염소발생장치에서 발생하는 총 염소 생성량 및 소독부산물 생성 특성**

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Many people in the world, especially in developing countries, suffer from an unsafe drinking water and every year, over 1.5 million deaths occur from water-borne diseases. Water-borne diseases, such as cholera, typhoid, dysentery, are mainly caused by inexhaustive disinfection of drinking water. To help solving these problems, we developed a Portable Electrochemically Generated Chlorine Disinfection Device(portable chlorine disinfection device), based on the principle of electrochemical chlorine generation, which can be conveniently used in village or home unit. In this study, we investigated the characteristics of formation of chlorine and disinfection by-products (DBPs, chlorite(ClO2-), chlorate(ClO3-), perchlorate(ClO4-)) which could be produced during the chlorine generation process. The experimental results show that amount of chlorine (assumed as ~300 mg) suitable for disinfecting 500 L of water can be generated by operating the portable chlorine disinfection device for 8 minutes with 10 g of salt. At this condition, in the case of DBPs generation, chlorite was not detected, concentrations of chlorate and perchlorate were one-fortieth and a quarter of drinking water guideline values, respectively. (The drinking water guideline values are: less than 700 μg/L for chlorite and chlorate, and less than 15 μg/L for perchlorate) Therefore, we confirmed that the portable chlorine disinfection device is applicable as disinfecting device for village or home unit, and its level of DBPs was not an issue of concern

**KEYWORDS**: Portable electrochemically generated chlorine disinfection device, Electrolytic chlorination, chlorite, chlorate, perchlorate

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