

Destruction of bacterial spores by hydrogen peroxide and ultraviolet light. WILL M. VAITES\*, STEVE E. HARDING, DAVE R. FOWLER, S. HELEN JONES, DAVE SHAW\* and MAGGIE MARTIE\*, University of Nottingham, U.K. and \*SERC, Daresbury Laboratory, Warrington, U.K.

Ultraviolet light irradiation of bacterial spores in the presence of hydrogen peroxide has been shown to produce synergistic kills when compared with ultraviolet light and hydrogen peroxide used sequentially and this use in combination has been patented for the commercial sterilisation of packaging before filling with UHT processed products. Previous results have shown that lamps producing ultraviolet light with a maximum output at 350 nm did not produce any synergism but that germicidal lamps with a maximum output at about 256 nm were extremely effective. Results obtained using the Synchrotron Radiation Source to produce a narrow band of irradiation now show that the greatest kill of spores of *Bacillus subtilis* in the presence of hydrogen peroxide is obtained with radiation at 270 nm. Such results suggest that the action of the ultraviolet light is not directly on the spore DNA but may be related both to the production of free hydroxyl radicals from hydrogen peroxide and directly on the spore dipicolinic acid.

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