

WVC:RMC

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
WASHINGTON

Letter
Circular
LC-631
(Supersedes LC462)

February 12, 1941

SUN LAMPS, HEALTH LAMPS; CARBON AND MERCURY ARC LAMPS.

The National Bureau of Standards does not indorse or give information relative to the therapeutic value of various types of lamps. It confines its investigations to the physical characteristics of the radiation emitted by the various sources of radiation. Comparative data and spectral energy curves of the radiation emitted by the carbon and the mercury arc lamps and by the sun, are given in B.S. Scientific Paper No. 539 (price 15 cents a copy), and in B.S. Journal of Research, R.P. No. 450 (price 5 cents a copy), both obtainable from the Superintendent of Documents, Government Printing Office, Washington, D. C. Data on Sources of Ultraviolet and Infra-red Radiation Used in Therapy -- Physical Characteristics -- by W.W. Coblentz are given in the J. American Medical Association, vol. 103, pp. 183 to 188, and 254 to 257, July 21 and 28, 1934.

The short and incomplete summary in letter circular, LC-225, issued on March 5, 1927, in which it was stated that of all the artificial illuminants tested, the carbon arc is the nearest approach to sunlight in spectral energy distribution" was supplemented with a statement in the B. S. Technical News Bulletin No. 140, issued December, 1928, to the effect that while it is true that the spectral radiation from the carbon arc is the closest approach to sunlight, even this source is far from being an exact match of sunlight, in spectral intensity. It contains ultraviolet radiation of short wave lengths, and infra-red radiation of long wave lengths which are not found in sunlight. Covering the carbon arc with a special glass window obstructs these extreme wave lengths; nevertheless there remains a selective emission band of ultraviolet radiation (the "cyanogen band"), the intensity of which is far in excess of that observed in sunlight. None of the sources in common use, whether in the form of a carbon arc, mercury arc, incandescent tungsten filament, or combinations thereof, have a spectral energy distribution that closely approximates that of sunlight.

The kind of holder or reflector has little or no effect upon the radiation emitted by the carbon arc, which is controlled by the kind of electrodes and the amount of electric current used. For this reason, this bureau does not test lamps or submit names of manufacturers of therapeutic lamps.

This bureau issues no data on the various forms of so-called "health ray" and "sun lamps" sold for home use. Lamps sold indiscriminately for home use, without the direction of an experienced medical technician, are necessarily of low intensity to avoid injury from overdosage. Purchasers of ultraviolet lamps should exercise great caution in their use to avoid injury from burns from ultraviolet rays and from the housing of the lamp. Freedom from fire hazards should also be noted.

Specifications of minimum intensity of ultraviolet radiation, useful for therapeutic purposes, emitted by various types of lamps, are given in the Journal of the American Medical Association, vol. 114, pp. 325 and 326 (January) 1940.

Regulations to govern advertising of ultraviolet generators to the public only, are published in the J. American Medical Association, vol. 93, pp. 400 and 401; January 30, 1932. Similar regulations, to the medical profession: J. American Medical Association, vol. 102, pp. 841 and 842; March 17, 1934. For information on therapeutic questions, address the Council on Physical Therapy, American Medical Association, 535 North Dearborn Street, Chicago, Illinois.