

Other girls applied the ready made paint with camel's hair brushes to the dials. After each application of the paint the brush was dipped into water and then wiped clean with a cloth. It was customary with the girls to point the brush, after dipping it into the water, by drawing it between the lips. Thus, some of the paint which was stripped off during this procedure remained attached to the lips and was later ingested. In some operations the radioactive material was dusted on the dials after these had been provided with a coat of enamel or of zinc sulphide with varnish. The finely powdered, radioactive luminous composition was dusted on before the coating had dried completely. The excess material was removed later with a brush. A fine dust was found to settle on the hands of the operators, who inhaled some of the radioactive matter.

There had been 15 fatalities among girls employed in this plant during this period. Five of them had died with symptoms suggesting the presence of an occupational poisoning with radioactive substances. These girls developed some time before death a necrosis of the jaw resulting in loss of teeth and resembling to some extent the type of necrosis of the jaw seen in phosphorus poisoning. There had been no appreciable or characteristic changes of the blood in the exposed girls at this time (1926).

Flinn, who investigated the allegedly occupational character of these disease conditions which had been brought up in connection with the painting of luminous dials, pointed out in refutation of such claims that: 1. the death of five girls from a disease of unknown cause was statistically insignificant; 2. that the medical examination of two-thirds of the girls employed at dial painting at that time in United States, and a study of similar workers in England and on the European continent, where a total of 4,000 to 5,000 girls had been employed in this industry, had not revealed a single additional case of necrosis of the jaw outside of Orange, where 50 per cent of the workers had teeth extracted since beginning work in that industry; 3. that the study of the blood of the workers did not reveal any constant or marked changes related to the duration of exposure (14.2 per cent of the workers had a mononucleosis above 8 per cent); 4. that the radium necrosis observed after therapeutic applications of radium to bony tissues exhibited first a porosity, which developed gradually after months or even years following the exposure and which ended in a complete disintegration and sequestration of the bone, while the bone necroses present in the dial painters displayed a gelatinous liquefaction of the jaw bone during the later stages of the disease; 5. that a phosphorus etiology of these changes could be dismissed as the phosphorus necrosis of the jaw is characterized by the multiplicity of the porotic areas, which appear to be well isolated from each other; and 6. that feeding experiments conducted on animals had shown that 98 per cent of the ingested radioactive material was excreted within a few days after the exposure was stopped. The application of the paint to the skin and oral mucosa of goats and guinea pigs, continued for over six