Some degree of skin reaction will occur in an estimated 90% of women undergoing breast irradiation following lumpectomy or mastectomy (Harper, Franklin, Jenrette, & Aguero, 2004). Reactions can range from faint erythema to painful skin breakdown. They can impact quality of life and affect outcomes if they become a source of significant pain or discomfort, limit daily activities, or interrupt treatment.

Breast irradiation following lumpectomy or mastectomy commonly is delivered through medial and lateral tangential x-ray beams for six to seven weeks. The beam arrangement is designed to avoid normal lung and cardiac tissue (Harper et al., 2004). However, the beam must travel through the skin to reach its target. Porock, Kristjanson, Nikoletti, Cameron, and Pedler (1998) conducted a study to identify risk factors for radiation-induced skin reactions in patients with breast cancer. They found that predictive factors include weight, larger breast size, lymphocele aspiration, cigarette smoking, history of skin cancer anywhere on the body, tumor stage, and radiation dose. Treatment-related factors revealed in the literature are fraction size (dose delivered with each treatment), total dose, volume of tissue treated, type of radiation, and concurrent chemotherapy (Harper et al.). An unexpected finding in the Porock et al. investigation was that the sternal skin reaction at week five was less severe in women 60 years of age or older. The finding may be explained by the reduction in epidermal mitosis with age, rendering the skin less susceptible to radiation damage.