A microwave heater (22) which uses electromagnetic radiation for heating liquid flowing from a liquid source to a liquid receiver. The microwave heater (22) includes a microwave generator having an interaction region (28) within which the electromagnetic radiation is generated. At least a portion of a conduit (30) which has an inlet (32) connected to the liquid source and an outlet (34) connected to the liquid receiver is deployed within the interaction region (28). The liquid flows through the conduit (30) acting as a dielectric load of the microwave generator so as to be heated by the electromagnetic radiation.