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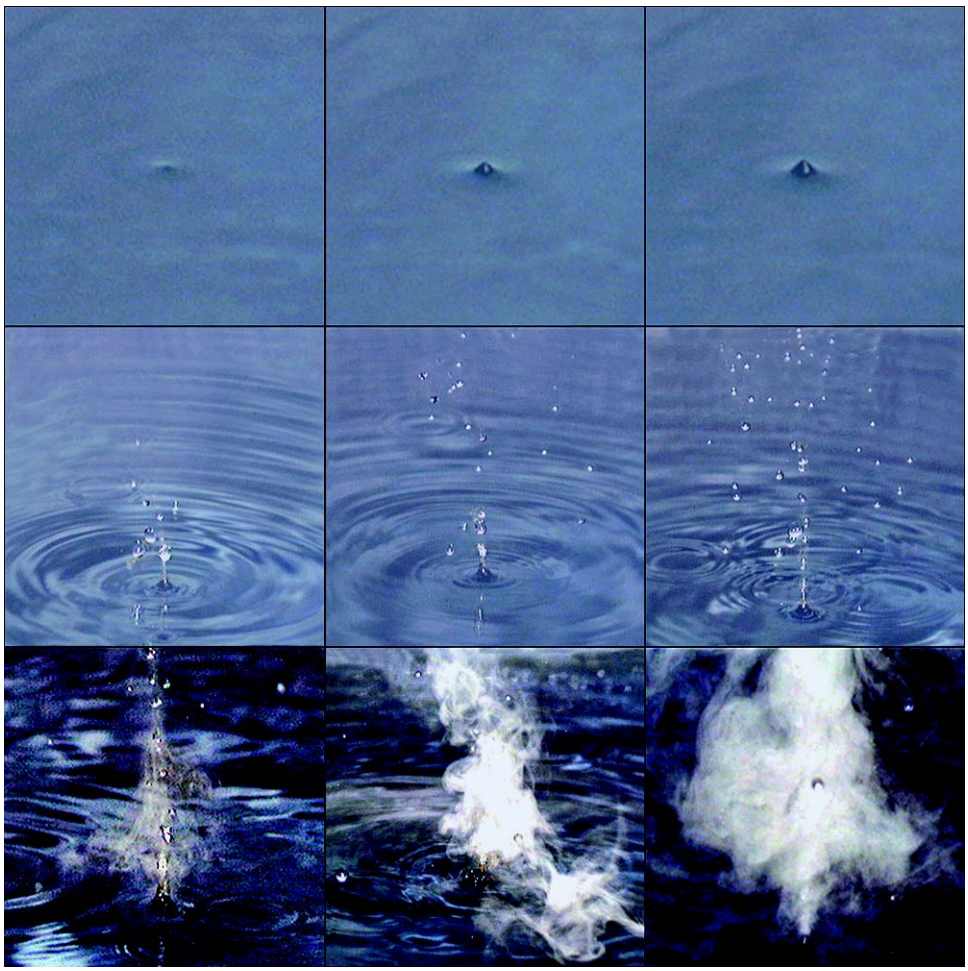

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Fountain Effect Produced by an Ultrasound Field

Ultrasound-induced lung damage in animals can be produced at acoustic pressure levels currently used in diagnostic ultrasound imaging systems. A simplified *in vitro* model for the region near the lung pleural surface is a water-air interface, a model that is being investigated to assess a potential lung damage mechanism. When a focused ultrasound wave is normally incident from water onto the water-air interface, the water surface is displaced upward. The water surface displacement images were photographed (Nikon E2 digital camera) at a water-air boundary. The 6-cm-diameter 3.32-MHz f/2.25 focused ultrasound source has a free-field pulse-echo -6-dB beamwidth at the focus of 1.2 mm. The focus is at the water-air interface. The free-field *in vitro* peak rarefactional pressures (left to right, then up to down) at the focus are 0.6, 1.1, 1.4, 1.5, 1.6, 1.8, 2.0, 2.2 and 2.5 MPa. Their respective temporal-average intensities at the focus are 0.14, 0.62, 1.1, 1.2, 1.4, 1.8, 2.4, 3.4 and 4.7 W/cm^2. The pulse duration is 12.4 μs and the pulse repetition frequency is 1 kHz.

Images courtesy of Stacie S. Sakai, James P. Blue, Jr., and William D. O'Brien, Jr., Bioacoustics Research Laboratory, Department of Electrical and Computer Engineering, University of Illinois, Urbana-Champaign. This work is supported by NIH Grant HL58218.)

Image files available for download: CMYK Image, CMYK JPG format, 759 KB; RGB Image, RGB JPG format, 392 KB