



## QFA's Questions Frequently Asked<sup>sm</sup>

### The Effects of X-Radiation upon the Quality and Fertility of Stallion Semen G.C.W. England and M. Keane

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#### **Abstract**

The exposure that stallion semen might receive during examination using an airport x-ray security screening system was found to be between 0.5 and 1.0 micro Sieverts . Ejaculates from 2 stallions were diluted 1:4 (volume) using a nonfat dried milk-glucose extender. A total of 6 ejaculates from each stallion were collected, and each ejaculate was divided into 3 aliquots and these were then exposed to x-radiation at a dose of 0, 1.0, or 10.0. Semen quality was examined immediately post exposure, and the aliquots were then placed into a water bath at 37°C, after which sample longevity was evaluated.

In a second trial, 3 groups of 8 pony mares were inseminated with semen that had been exposed to x-radiation at doses of 0, 1.0, or 10.0. An entire ejaculate was irradiated and inseminated into each mare on one occasion during estrus, based upon ultrasonic evaluation of the reproductive tract.

After exposure to x-radiation there were no differences among the 3 treatment groups for spermatozoa motility, morphology, or longevity. The 14-d pregnancy rates for the 3 treatment groups were 0 (7 mares), 1.0 (8 mares), and 10.0 (7 mares). One mare (0) aborted at 65 d of pregnancy; 21 mares had a pregnancy of normal length, with each delivering a foal at term, although 1 foal died at parturition (1.0).

These findings indicate that the exposure of stallion spermatozoa to x-radiation up to doses of 10 does not have deleterious effects upon spermatozoa motility, morphology, longevity or fertility. The exposure received during examination using an x-ray security screening system is likely to be lower than this dose.

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