

## Occurrence, Transport Risk and Assessment of *Cryptosporidium*

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*Cryptosporidium* can infect people when swimming or diving in the recreational water bodies. Here, our work shows findings regarding the transport of *Cryptosporidium* sized-microspheres from soil to the water bodies, which was a potential source of *Cryptosporidium* of water bodies, as well a one-year investigation of the occurrence and distribution of protozoan parasites *Cryptosporidium* in Yunlong Lake, Xuzhou, China. The objective of this work was to investigate the soil chemical characteristic impact on transport of *Cryptosporidium* from the bank soil to surface water bodies, and to evaluate the full-body contact risk of infection of *Cryptosporidium* in the lake. Results show (1) The number of *Cryptosporidium*-sized microspheres transport declined from 25 #/mL to 2 #/mL while the Total Organic Carbon (TOC) in soil increased from 0mg/L to 40mg/L. The number of microspheres washed out reduced sharply with the increased of the content of sodium ion in soil, while the content of sodium ion in soil increased from 0.007mol/L to 0.200mol/L the substitutes washed out reduced from 115 #/mL to 33 #/mL. The transport of microspheres remains stable for the weakly alkaline soil and reduced sharply for the weakly acidic soil, when soil pH rose from 5 to 7, microspheres washed out stabilized at 24 #/mL, but when soil pH rose to 8, microspheres washed out sharply reduced to 10 #/mL. (2) The number of *Cryptosporidium* oocysts were 0-8/10L in water samples and 0-260/g in sediment samples. According to risk assessment, in July, it is the highest risk for swimming or diving (probability of each time infection was  $3.66 \times 10^{-3}$ ). Therefore, soil chemical characteristics have an important impact on *Cryptosporidium* transport with runoff. Monitor of *Cryptosporidium* in water bodies is highly recommended after a rain.

Keywords: risk assessment, transport, runoff, *Cryptosporidium*