I c s

The con amina ion of bo ehole and hallo ells f om on- i e la ine i an i e ha i gene all poo l nde ood and i a ionall a e ed b o gani a ion implemen ing a e ppl and ani a ion p og amme . Thi ho ld no be he ca e a he heal h i k a e of en lo ē han pop la l an icipa ed. The me hod of i k a e men o lined in hi fac hee i hin he


Large reg lar

G : The g ea e he h d a lic g adien o ā d he ā e poin , he highe he i k of ā e poin con amina ion.

Wi h an nde anding of he e 6 gene al le i i po ible o nde ake a dimen a i k a e men .

A

A e ing he i k of ā e poin con amina ion f om la ine i ba ed on gaining an nde anding of he amo n of ime i ō ld ake he ā e , and he pa hogen i con ain , o a el f om he pi o he ā e poin . The longe i ake , he g ea e he ed c ion in he n mbe of pa hogen h o gh na al die-off. The o e all aim in ei he i ing a la ine o ā e poin i o en e ha he pa hogen die-off ha been fficien o ed ce he i k o a le el ā he e i i no a p blic heal h conce n.

The ime aken can be ed a a p o indica o fo i k of con amina ion. The G ideline fo A e ing he Ri k o G o nd ā e f om On-Si e Sani a ion (ARGOSS) p od ced b he B i i h Geological S e (BGS) a e ha he follo ing ime a e applicable o a e ing i k f om mic obiological con amina e .

Significan i k	Time aken i le han 25 da
Lo i k	Time aken i mo e han 25 da
Ve lo i k	Time aken i mo e han 50 da

(BGS - ARGOSS 2001)

AGROSS ake ca e o e ha he 'lo i k' ca ego ho ld p o ide confidence, b no g a an ee , ha he a el ime ō ld e l in le el of mic o-o gani m hich a e nlikel o ep e en a majo i k o heal h. The ' e lo i k' ca ego p o ide a f he ma gin of afe and he efo e g ea e confidence ha he ā e ill mee WHO g ideline and ha he mo e pe i en pa hogen ill ha e been emo ed.

A

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Beca e of he e lo eloci ie of n a a ed flo , he n a a ed B one i he mo impo an line of defence again faecal poll ion of he a ife (Ca e & Kol k 1999). If he a e of an mi ion o he a ife i lo b he ime he ā e f om he pi eache he a ife , he pa hogen in i ill ha e died off and he i k o p blic heal h ill be minimal.
The capaci of he la ine de ign and he n a a ed B one o ed ce he i k of con amina ion can be e ima ed b ing a combina ion of he follo ing able .

Example 1: In a clean and safe groundwater pipeline is situated 20m from a groundwater point the number of days taken for a pathogen to travel to the groundwater point is:

$$\text{Number of safe days} = \frac{0.25 \quad 20\text{m}}{60\ \text{m/d} \quad 0.01}$$

Number of safe days = 8.3 days = a significant risk of contamination

Example 2: In a fine silt and safe groundwater pipeline is situated 20m from a groundwater point the number of days taken for pathogen to travel to the groundwater point is:

$$\text{Number of safe days} = \frac{0.15 \quad 20\text{m}}{6\ \text{m/d} \quad 0.01}$$

Number of safe days = 50 days = a very low risk of contamination

l i impo an o keep he comm ni info med and o di c ri h hem he implica ion of o finding . Wi h comm ni -o ned a e poin he e ho ld ha e he l ima e deci ion a

I ?

G o nd a e con amina ion i h a ma e of deg ee, and a he han ba ing all deci ion on ab ol e a e ali a ge o g ideline , i ma be mo e helpf l o i e fo he be p ac icable a e ali hich ma be achie ed h economic, financial, echnical, and ocial con ain . S ch an app oach ill a h locall a ailable al e na i e of a e ppl

If ho e , one e ie he epidemiological e idence conce ning he ela ion hip be een do e and e pon e in d inking a e , he e idence fo he mo commonl ed indic o , (E coli), appea ignifican a do e g ea e han 1000 E.coli / 100ml I o ld hi appea n e o fo ego he heal h benefi of affo dable and ainable ani a ion o elimina e he i k of g o nd a e con amina ion of le han 1000 E.coli / 100ml

Ca a K , G. a , a a a , WELL Ta 163 1999.

F I

The G ideline fo A e ing he Ri k o G o nd a e f om On-Si e Sani a ion (ARGOSS), B i i h Geological S e (BGS) 1991.

G o nd a e , la ine and heal h, WELL Ta k 163, Ben Ca e and Pe e Kol k 1999.

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