



## *Waa maxay sababta ay biyahaygu ugu urayaan sida Ukun quruntay?*

## **Hydrogen Sulfide iyo Bakteeriyada Sulfur ee ku jirta Biyaha Ceelka ku jira**

**Gaaska hydrogen sulfide (H<sub>2</sub>S)** wuxuu siin karaa biyaha dhadhanka ama urta "ukunta quruntay". Gaaskani waxa uu ku jiri karaa ceelasha meel kasta oo waxa uu noqon karaa:

- Mid si Dabiiciga ah ugu jira - natiijo ka timid qurmitaanka iyo falgalka kiimikada ee ciidda iyo dhagaxyada.
- Waxa soo saara qaar ka mid ah "bakteeriyada sulfur" ee ku jirta biyaha dhulka hoostiisa, ceelka, ama nidaamka tuubooyinka.
- Waxaa soo saara bakteeriyada sulfur ama falgalka kiimikada ee gudaha kuleyliyaha biyaha.
- Waxay ka timid wasakhawga hawada (tani waa naadir).

## **Waxaa laga yaabaa inay caawiso bakteeriyada kale inay koraan**

Bakteeriyada sulfur waxay soo saartaa leelo/dheecaan isjiita oo adag waxayna caawin kartaa bakteeriyada kale inay koraan, sida bakteeriyada birta iron. Leeladu waxay xiri kartaa ceelasha, tuubooyinka, iyo hababka waraabka.

## **Gaaska ayaa laga yaabaa inuu waxyeelo yeesho**

Iyadoo bakteeriyada sulfur (baaruudda) aysan waxyeello lahayn, gaaska hydrogen sulfide ee hawada ku jira waxyeelo ayey geysan kartaa marka ay tahay heerar sare. Waa muhiim in biyaha laga saaro gaaska ama lagu sii daayo gaaska hawada bannaanka. Hawo-qaadiddu/laydhintu waxay ka hortagtaa gaasku inuu ku ururo meelaha hoose (sida ceelasha iyo guriga salkiisa hoose) ama meelaha xiran (sida guryaha ceelka ah). Kaliya xirfadlayaasha ceelasha ee isticmaalaya taxaddarrada badbaadada ee habboon waa inay tixgeliyaan gelitaanka godka ceelka ama meel kale xiran halkaas oo gaaska hydrogen sulfide uu ku jiro.

## **Sida loo ogaado**

- **Leelada bakteeriyada** ah waxay noqon kartaa caddaan, cawl, madow, ama bunnii guduudan haddii la xiriirto bakteeriyada birta (calaamadaha bakteeriyada sulfur).

- **Wasakh madow** oo ay yeelato alaabta qalinka ah iyo qalabka tuubooyinka (calaamadaha gaasta hydrogen sulfide).
- **Daxalka tuubooyinka** iyo qaybaha birta ee nidaamka qaybinta biyaha (calaamadaha gaasta hydrogen sulfide).

## **Tixgeli in aad tijaabisaan/baartaan biyaha**

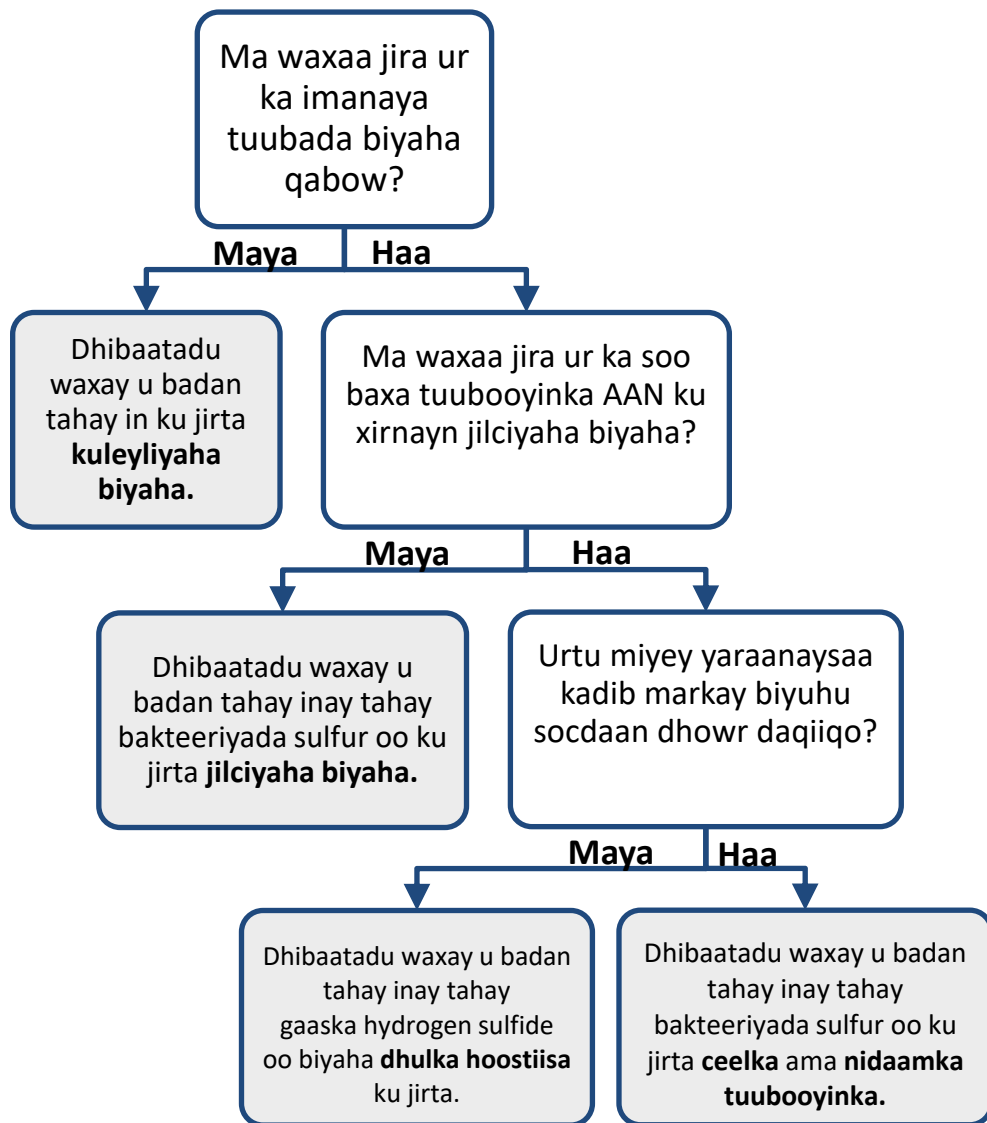
Inta badan, urta ukunta qudhuntay kuma xirna tayada nadaafadda biyaha. Marar dhif ah, gaasku wuxuu ka iman karaa bullaacada ama wasakhow kale. Si aad u badbaadaan, ka tijaabi biyaha ceelkaaga bakteeriyada coliform iyo nitrate.

## **Waxa aad samayn karto**

Talaabada koowaad waa in la ogaado meesha ay cilladu ka timid; taasi waxay ku sheegi doontaa doorashada daawaynta ugu fiican.

## **Sida loo Helo Meesha ay ka Imanayso cilladdu**

Kadib markaad ka maqnayd gurigaaga dhowr saacadood, urso biyaha ka soo baxaya tuubooyinka biyaha kulul iyo kuwa qabowba. Aqoonso tuubooyinka leh urta "ukunta qudhuntay".



## Haddii dhibaataadu ka jirto kuleyliyaha biyaha

Ilaa aad aqoon u leedahay sida uu u shaqeeyo kuleyliyaha biyaha iyo dayactirkiisa mooyaane, howsha ha qabtaan khabiir ku takhasusay nidaamka biyaha.

- **Ka beddel ama ka saar magnesium anode.** Kuleyliyeyaasha biyaha badankoodu waxay leeyihiin magnesium anode, kaas oo ku dheggan fur ku yaal dusha sare ee kuleyliyaha biyaha. Waa laga saari karaa iyadoo biyaha la daminayo, cadaadiska laga sii daynayo kuleyliyaha biyaha, oo laga furayo furka. Hubi inaad godka daboosho. Si kastaba ha ahaatee, ka saarista anode- ku, si kastaba ha ahaatee, waxay si weyn u dhimi kartaa nolosha kuleyliyaha biyaha. Waxaa laga yaabaa inaad u baahato inaad la tashato iibiyaha kuleyliyaha biyaha si aad u go'aamiso haddii anode beddelaad ah oo ka samaysan shay kale, sida aluminium, lagu rakibi karo. Anode beddelaad ah ayaa laga yaabaa inay bixiso ka ilaalinta daxalka iyada oo aan wax ku biirin soo saarista gaasta hydrogen sulfide.

- **Ka nadiifi jeermiska oo ku nadiifi kuleyliyaha biyaha qas koloriin ah.** Ku daawaynta koloriintu waxay dili kartaa bakteeriyada sulfur. Haddii dhammaan bakteeriyadu aysan ku baabi'in koloriinta, dhibaatadu waxay soo noqon kartaa dhowr toddobaad gudahood.
- **Kordhi kulaylka kulayliyaha biyaha ilaa 160 darajo Fahrenheit (71 darajo Celsius) dhowr saacadood.** Tani waxay baabi'in doontaa bakteeriyada sulfur. Biyo raacinta si looga saaro bakteeriyada dhimatay daawaynta kadib ayaa xakamaysa dhibaatada urta.

**Digniin:** Kordhinta heerkulka kuleyliyaha biyuhu waxay noqon kartaa khatar. Kala tasho soo saaraha ama iibiyaha wixii ku saabsan daboolka/afka loogu talagalay in cadaadiska lagaga dhimo, iyo talooyinka kale. Hubi inaad hoos u dhigto heerkulka biyaha oo hubi in heerkulka biyuhu hoos u dhacay daawaynta kadib si looga hortago dhaawaca ku gubashada biyaha kulul iyo si looga fogaado kharashka tamarta oo sarreeya.

### Sida Gaaska Hydrogen Sulfide ay ugu Samaysanto Gudaha Kuleyliyaha Biyaha

Kuleyliyaha biyuhu wuxuu ku siin karaa jawi ku habboon U beddelka sulfate gaasta hydrogen sulfide. Kuleyliyaha biyuhu wuxuu ku soo saari karaa gaasta hydrogen sulfide laba siyaabood - abuurista jawi diiran oo ay bakteeriyada sulfur ku noolaan karto, iyo joogteynta falgalka u dhaxeeya sulfate ee biyaha iyo anode-ka kuleyliyaha biyaha. Kuleyliyaha biyuhu wuxuu inta badan leeyahay ul bir ah oo la yiraahdo "anode", kaas oo loo rakibay si loo yareeyo daxalka haanta kuleyliyaha biyaha. Anode-ku wuxuu inta badan ka samaysan yahay birta magnesium, kaas oo siin kara elektaroonnada ka caawiya beddelka sulfate gaaska hydrogen sulfide. Anodeku waa 1/2 ilaa 3/4 inji ballac iyo 30 ilaa 40 inji dherer.

### Haddii ay dhibaatadu ka jirto Ceelka, Nidaamka Tuubooyinka, ama Biyo-Jiliciyaha

Ceelkaaga iyo nidaamka tuubooyinka ku nadiifi isku qas koloriin xoog badan leh. Waxaad kiraysan kartaa qandaraasle ceel oo shati u haysta si uu tan u sameeyo ama u tixraac [Well Disinfection \(Nadiifinta/Jeermis ka Dilista Ceelka\) \[PDF\]](http://www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/di-sinfectionsom.pdf) ([www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/di-sinfectionsom.pdf](http://www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/di-sinfectionsom.pdf)).

Bakteeriyada sulfur way adkaan kartaa in laga saaro marka ceelka ay ku abuuranto. Diyaargarooba shaqada kahor (sida xoqida dahaarka ceelka, isticmaalka kiimikooyinka daawaynta khaaska ah, iyo kicinta biyaha kahor inta aan jeermiska laga nadiifin) ayaa laga yaabaa inay lagama maarmaan yihiin - gaar ahaan haddii ay sidoo kale ku jirto bakteeriyada birta iron. La xidhiidh qandaraasle ceel oo shati leh si uu u sameeyo shaqadan hore.

Haddii bakteeriyadu ay ku jirto jilciyaha biyaha ama qalabyada kale ee daaweynta, la xiriir rakibaha ama soo saaraha si aad uga hesho tilmaamaha nadiifinta.

### Haddii dhibku ka jiro biyaha dhulka hoostiisa

Ku rakibida daaweynta biyaha guriga ama qodista ceel cusub qaab oo ka duwan ah ayaa labaduba ah fursad. Hoos waxaa ku yaalla noocyada daaweynta biyaha guriga ee waxtarka leh si looga saaro gaaska hydrogen sulfide. Wax badan ka baro [Websaydka Daawaynta Biyaha Guriga](http://www.health.state.mn.us/communities/environment/water/factsheet/hometreatment.html) ([www.health.state.mn.us/communities/environment/water/factsheet/hometreatment.html](http://www.health.state.mn.us/communities/environment/water/factsheet/hometreatment.html)) (keliya oo lagu heli karaa Ingiriis wakhtigan). Waxaad soo iibsanaa kartaa oo aad adigu rakibi kartaa unug daawaynta, ama waxaad la shaqayn kartaa khabiirka daaweynta biyaha. Haddii aad

la shaqayso xirfadlaha daawaynta, hubi inay yihiin qandaraasle biyo cimilaynta oo shati haysta adiga oo isticmaalaya Diiwaanka Fiirinta Shatiga ee Waaxda Shaqada iyo Warshadaha ee Minnesota (<https://www.dli.mn.gov/license-and-registration-lookup>) (kaliya waxaa lagu heli karaa Ingiriisi wakhtigan).

- **Shaandhooyinka kaarboonka firfircoon (activated carbon)** ayaa waxtar u leh heerarka hydrogen sulfide ee ka yar 1 milligram litirkii (mg/L). Gaaska waxaa ku xayiraya kaarboonka ilaa shaandhadu ay buuxsanto. Maadaama oo uu filtarka kaarboonku uu ka saari karo walxaha marka lagu daro gaaska hydrogen sulfide, way adagtahay in la saadaaliyo nolosha adeeggeedu inta uu gaarayo. filtarrada kaarboonka ee waaweyn qaarkood ayaa la ogaaday inay jirayaan sanado, halka filtarrada yaryar qaarkood ay jiri karaan toddobaadyo ama xitaa maalmo.
- Kuwa soo socdaa waa xulashooyin waxtar u leh heerarka ka hooseeya iyo kuwa ka sarreeya 1 mg/L labadaba.
  - **Ku sifeynta qalabka oksadhaynta (sida filtarka manganese greensand)** ayaa waxtar u leh heerarka hydrogen sulfide ee ilaa 6 mg/L. Daaweynta noocan ah waxaa badanaa loo isticmaalaa in lagu daaweeyo dhibaatooyinka birta iron ee ku jirta biyaha. Qalabku wuxuu ka kooban yahay manganese greensand , taas oo ah ciid lagu dahaadhay manganese dioxide. Gaaska hydrogen sulfide ee biyaha ku jira waxa loo beddelay qaybo yaryar oo sulfur ah marka ay dhex marto shaandhada. Filtarka waa in si muddadiiba mar dib loo soo cusboonaysiiyo, iyadoo la isticmaalayo potassium permanganate, ka hor inta ayna awoodda greensand dhamaanin
  - **Hawo-qaadista/laydhinta iyo sifaynta.**
  - **Si joogto ah ugu isticmaalka koloriinta iyo sifaynta**
  - **Si joogto ah ugu isticmaalka Ozone (Ozonation) iyo sifaynta.**

## Biyaha ceelkayga miyaan ka baaraa wax aan ahayn Hydrogen Sulfide?

Haa. Ilaha dabiiciga ah iyo hawlaha bani'aadamka labaduba waxay wasakhayn karaan biyaha ceelka waxayna sababi karaan saamayn caafimaad oo muddo gaaban ama mid dheer. Tijaabinta biyaha ceelkaagu waa habka kaliya ee loogu ogaan karo inta badan wasakhooyinka caadiga ah ee ku jira biyaha dhulka hoose ee Minnesota; ma dhadhamin kartid, ma arki kartid, mana urin kartid inta badan wasakheeyeyaasha. Waaxda Caafimaadka ee Minnesota waxay ku talinaysaa in laga baaro:

- **Bakteeriyada Coliform** sannad kasta iyo wakhti kasta oo biyuhu isbeddelaan dhadhanka, urta, ama muuqaalka. Bakteeriyada Coliform waxay tilmaami kartaa in jeermiska cudurada keenaa ay ku jiraan biyahaaga.  
Eeg ka Badbaadida Bakteeriyada ku jirta Biyaha Ceelka  
([www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/bacteriasom.pdf](http://www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/bacteriasom.pdf)).
- **Nitrate in laga baaro sanad walba.** Dhallaanka dhalada lagu quudiyo ee ka yar lix bilood waxay halis ugu jiraan inay saameeyaan heerarka nitrate-ka ee ka sarreeya 10 milligaraam litirkii ee ku jira biyaha la cabbo.  
Ka eeg Nitrite ku jirta Biyaha Ceelka

([www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/nitratesom.pdf](http://www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/nitratesom.pdf)).

- **Arsenik ugu yaraan hal mar.** Qiyaastii 40 boqolkiiba ceelasha Minnesota waxaa biyaha ku jira arsenik. Cabitaanka biyaha leh arsenik muddo dheer waxay gacan ka geysan karaan hoos u dhaca garaadka carruurta iyo kordhinta khatarta kansarka, sonkorowga, cudurrada wadnaha, iyo dhibaatooyinka maqaarka ee dadka waaweyn.  
Eeg Arsenik ku jirta Biyaha Ceelka  
([www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/arsenicson.pdf](http://www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/arsenicson.pdf)).
- **Macdanta Lead ugu yaraan hal mar.** Ceelka iyo nidaamka biyuhu waxay yeelan karaan qaybo ay ku jiraan liidh/sunta rasaastu, oo liidh/sunta rasaastu waxay geli kartaa biyaha la cabbo. Sunta rasaastu waxay dhaawici kartaa maskaxda, kelyaha, iyo habdhiska dareenka. Sunta rasaastu waxa kale oo ay hoos u dhigi kartaa korriinka ama waxa ay sababi kartaa dhibaatooyinka waxbarashada, hab dhaqanka, iyo maqalka.  
Ka eeg Liidhka/Sunta Rasaasta ee ku jirta Biyaha Ceelka  
([www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/leadsom.pdf](http://www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/leadsom.pdf)).
- **Manganiis ka hor inta uusan ilmuhu cabin biyaha.** Heerarka sareeya ee manganiis ayaa waxay sababi karaan dhibaatooyinka dhanka xusuusta, dareenka, iyo xirfadaha dhaqdhaqaaqa muruqyada. Waxaa kale oo ay dhallaanka iyo carruurta u keeni kartaa dhibaatooyinka waxbarashada iyo hab dhaqanka.  
Ka eeg Manganiis-ka ku jirta Biyaha la cabbo  
([www.health.state.mn.us/communities/environment/water/contaminants/man-ganese.html](http://www.health.state.mn.us/communities/environment/water/contaminants/man-ganese.html)) (kaliya waxaa lagu heli karaa Ingiriisi wakhtigan).

Wasakheeyayaasha kale ayaa mararka qaarkood ku jira goobaha biyaha ee gaarka loo leeyahay, laakiin in ka yar wasakheeyayaasha kor ku taxan. Tixgeli in aad ka baartaan:

- **Isku-dhafka Kiimikooyinka Dabiiciga ah ee Sida Fudud Hawada u** Raaca haddii ceelku u dhow yahay haamaha shidaalka ama goob ganacsi ama warshadeed.
- **Kiimikooyinka beeraha ee sida caadiga ah looga isticmaalo** aagga haddii ceelku gaaban yahay oo u dhow yahay beeraha laga beero dalaga ama meelaha lagu maamulo kiimikooyinka beeraha ama uu ku yaal aagga juqraafiga nugul (sida dhagax nuuradeed jajaban).
- **Fluoride** haddii carruurta ama dhallinyaradu ay cabbaan biyaha.

Si aad macluumaadkan ugu hesho qaab kale, soo wac 651-201-4600.  
Publications\Hydrogen Sulfide and Sulfur Bacteria in Well Water 06/15/2023 - Somali