



Arsenik-ga ku jira Ceelka Biyaha

Arsenik waxay si dabiici ah ugu jirtaa dhagxaanta iyo ciidda Minnesota oo dhan waxayna ku milmi kartaa biyaha dhulka hoostiisa. Biyaha la cabbo ee ay ku jirto arsenik waxay kordhin karaan halista kansarka iyo dhibaatooyinka kale ee caafimaad ee halista ah. Nasiib darro, ma jirto si loo ogaado heerka arsenik ee biyaha ku jira ka hor inta aan ceelka la qodin. Heerarka arsenik ee ku jira ceelasha ku yaalla meelo isu dhow ayaa kala duwanaan kara. Ma dhadhamin kartid, ma arki kartid, mana urin kartid arsenik-ga ku jira biyahaaga.

Ka baar ceelkaaga arsenik ugu yaraan hal mar kadib wixii ka dambeeya baarista hore ee biyaha ceelka marka ugu horraysa ee ceelka la qoday/dhisay. Baaristu waxay hubin doontaa inaad ogaato inta arsenik ku jirta biyahaaga la cabbo si aad u gaarto go'aan xog ogaal ah oo ku saabsan inaad tallaabo dheeraad ah qaado iyo in kale.

Halbeega biyaha la cabbo

Heerka ugu badan ee arsenic ee Wakaaladda Ilaalinta Deegaanka ee Maraykanku (EPA) ay u ogoshahay nidaamyada biyaha bulshadu waa 10 micrograms litirkiiba ($\mu\text{g}/\text{L}^*$). Si kastaba ha ahaatee, ku isticmaalka biyaha leh arsenik leh heerar ka hooseeya halbeega EPA sanado badan ayaa wali kordhin kara halista kansarka. Natiijada taas ka dhalatay, EPA waxay dejisay yoolka 0 $\mu\text{g}/\text{L}$ oo arsenik ah in uu ku jiro biyaha la cabbo.

**1 $\mu\text{g}/\text{L}$ waxay la mid tahay 1 qayb halkii bilyanba (ppb).*

Khatarta caafimaadka

Cunista/in ay jirkaaga galaan biyaha leh xitaa heerar arsenik ah oo hooseeya muddo dheer ayaa waxaa lala xiriiyaa sonkorowga iyo khatarta sii kordha ee kansarada kaadi haysta, sambabada, beerka, iyo xubnaha kale. Arsenik waxay sidoo kale gacan ka geysan kartaa cudurrada wadnaha iyo xididdada; garaadka carruurta oo yaraada; iyo dhibaatooyinka maqaarka sida nabarada, midabka oo doorsooma, iyo soo baxyada buroyinka nabarada ah. Saamaynta caafimaad ee arsenik waxay qaadan kartaa sanado badan inay soo baxdo.

Baar/tijaabi biyaha ceelkaaga

Ka baara arsenik ugu yaraan hal mar.

Waaxda Caafimaadka ee Minnesota (MDH) waxay ku talinaysaa inaad isticmaasho shaybaare la aqoonsan yahay in ay baaritaan ku sameeyaan biyahaaga. La xiriir shaybaar la aqoonsan yahay si aad u hesho weel muunad lagu soo qaado iyo tilmaamo, ama weydii adeegyada deegaanka ama caafimaadka ee degmadaada in ay bixiyaan adeegyo baarista ceelasha.

Shaybaarada La aqoonsan yahay ee Minnesota ee Aqbala Muunadaha ay mulkiilayaashu kasoo qaadaan Ceelka Gaarka loo leeyahay) [PDF]

(www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/labmap.pdf) (keliya waxaa lagu heli karaa Ingiriisiga wakhtigan).

Ceelasha cusub waxaa laga baaraa arsenik.

Laga bilaabo Agoosto 2008, qandaraaslayaasha ceelashu waxay ka baaraan ceel kasta oo dhawaan la qoday arsenik waxayna natiijada la wadaagaan milkiilaha ceelka iyo MDH.

Ka hel natiijooyinka baaritaanka ee jira: Isticmaal Tusmada Ceelasha Minnesota ee Khadka Internerka ku jirta online Minnesota Well Index (<http://www.health.state.mn.us/mwi>) (kaliya waxaa lagu heli karaa Ingiriisi wakhtigan) ama la xiriir MDH si aad u hesho natiijooyinka baaritaanka ceelasha la dhisay laga soo bilaabo 2008.

Tixgeli in aad xaqiijiso heerka arsenik.

- *Haddii aan muunada tijaabinta hore LAGAGA helin arsenik, biyahaagu waxay u badantahay in ayna goor xilli dambe yeelanin arsenik.*
- *Haddii arsenik laga helay ceelkaaga cusub, waxaa laga yaabaa inaad u baahato inaad dib u baarto ceelkaaga qiyaastii lix bilood ka dib markii la qoday. Cilmi-baaris MDH ayaa waxay ogaatay in marka arsenik laga helo ceel cusub, heerarka ku jiraa waxaa laga yaabaa in ay kordhaan ama hoos u dhacaan dhawrka bilood ee ugu horreeya dhismaha kadib. Wax intaas dheer ka ogoow daraasadan Ilaalinta Ceelka Gaarka ah ee Daraasadda Arsenic (<http://www.health.state.mn.us/communities/environment/water/cwf/arsenic.html>) (keliya waxaa lagu heli karaa Ingiriisi wakhtigan).*

Ka baro wax badan oo ku saabsan tijaabinta biyaha ceelka Baaritaanka Ceelka, Natiijooyinka, iyo Fursadaha

(<https://www.health.state.mn.us/communities/environment/water/wells/waterquality/tipssom.html>).

Ilaali caafimaadkaaga!

Ka baar biyaha ceelkaaga:



Tijaabintu waxay u sii muhiimsan tahay haddii carruurta yaryari ay cabbaan biyaha.

MDH waxa laga yaabaa inay kugula taliso inaad ka baarto wasakhooyin dheeraad ah iyadoo ku salaysan meesha aad ku nooshahay.

Ilaali qoyskaaga

Haddii arsenik laga helo heer kasta, tixgeli:

- Ku rakibida qaybta daawaynta ama
- Isticmaalka ilo kale oo biyaha la cabbo ah.

Biyaha la cabbo ee leh arsenik sanado badan waxay kordhiyaan halista cudurada sida kansarka.

MDH waxay aad ugu talinaysaa inaad tillaabo ka qaado haddii heerka arsenik uu ka sarreeyo 10 µg/L.

Qalabka Daaweynta Biyaha ee Yareeya Arsenik:

- **Reverse osmosis** waxay isticmaashaa tamar si ay biyaha ugu riixdo xuub leh daloolo yaryar. Xuubka ayaa celinaya wasakeeyayaasha iyaga oo u ogolaanaya in ay biyuhu ka dhex baxaan.
- **Nadiifinta Kala miirida (Distillation)** waxay isticmaashaa mashiino si ay u karkariso biyaha, taas oo ka dhigaysa uumi. Uumiga ayaa kor u kacaya oo ka tagaa wasakhda. Uumigu wuxuu ku dhacayaa qaybta qaboojinta, halkaas oo ay dib uga dhigayso biyo dareere ah.
- **Shayga qabsanaya (Adsorptive media)** waa gundhig shay oo sababaya in calaamadaha kala astaanta duwani ay ka fogaadaan biyaha oo ay qabsadaan shayga.
- **Beddelaada Anion (Anion exchange)** waxay ka saartaa macdanaha ku milmay biyaha. Mulkiilaha ayaa wuxuu ku daraa sodium chloride ama potassium chloride (cusbo), taas oo beddelaysa macdanta taban (negatively charged) ee ku jirta biyaha.
- **Falgelinta Ozone iyo faltarayntu (Ozonation and filtration)** waa hab uu ku sameysmo ozone (jeermis dila bakteeriyada iyo fayrasyada) ayaa lagu abuuraa iyadoo la isticmaalayo koronto ka dibna lagu duraa biyaha. Ozone ku wuxuu u beddeleyaa wasakhda biyaha ku qasantay walxo adag. Qurubyada adagi way -waaweyn oo kama shaandhoobi karaan biyaha.
- **Sifeynta Oksaydhaynta (Oxidation filtration)** waxay leedahay saldhig u beddeleysa wasakhda biyaha ku qasantay walxo adag. Qurubyada adagi way -waaweyn oo kama shaandhoobi karaan biyaha.
- **U adeegsiga koloriinta iyo ku sifaynta filtarka (Chlorination and filtration)** ayaa waxay u baahan tahay in mulkiiluhu ku daro warankiilo koloriin ah haanta haynta. Bamka waxa uu koloriin ku shubaysa biyaha, taas oo ka caawisa in ay wasakhda biyaha ku qasantay u badasha walxo adag. Qurubyada adagi way waaweyn yihiin oo kama shaandhoobi karaan biyaha.

Baro wax badan oo ku saabsan kala doorashooyinka daawaynta, faa'iidooyinka/waxyaabaha ay ku fiicanyihiin iyo waxyaabaha ay ku xunyihiin, iyo kharashyada guud ee ku [Daaweynta Biyaha Guriga](#)

(www.health.state.mn.us/communities/environment/water/factsheet/hometreatment.html)

(kaliya waxaa lagu heli karaa Ingiriisi wakhtigan) Khabiir ku takhasusay daaweynta biyaha ayaa kaa caawin kara inaad doorato xulashada ugu fiican qoyskaaga.

MDH waxa ay ku talinaysaa in aad doorato hab daawayn oo ay shahaadaysay hay'ad madax banaan, sida NSF International, Underwriter's Laboratory (UL), ama Ururka Tayada Biyaha (Water Quality Association (WQA)), kaas oo tijaabiya hababka daaweynta biyaha si loo xaqiijiyo waxtarkooda ku aaddan ilaa inta ay sheegatay shirkada soo saartay. Minnesota dhexdeeda, nidaamyada daaweynta biyaha waa in uu rakibaa qandaraasle shati leh oo boono ku jira ama qandaraaslaha biyaha qaboojinta/kulaylinta, in kasta oo mulkiilayaasha gurigu ay qalabka ku rakiban karaan guryaha ay leeyihiin ee ay deggan yihiin. Kadib marka nidaamka daaweynta lagu rabiko, waxaa muhiim ah in la raaco tilmaamaha talada soo saaraha ee loogu talagalay in lagu ilaaliyo dayactirka Sidoo kale, biyaha la daaweeyey waa in si joogto ah loo tijaabiyo si loo hubiyo in nidaamka daaweyntu uu shaqaynayo.

Xusuusnow in kasta oo hababka daawaynta qaarkood ay faa'iido u yeelan karaan ujeedooyin kale, nidaamyada sida jilciyaasha caadiga ah ee biyaha iyo filtarrada kaarboonka ee firfircoon (activated carbon) kaligood ma saarayaan arsenik. Sidoo kale, karkarinta biyaha ayaa waxay sii badinaysaa oo kaliya arsenik-ga, sababtoo ah waxaa uumi-baxaya biyaha qaarkood.

Isticmaalka ilo kale oo biyaha la cabbo ah

Waxaa jira dhawr doorasho oo aad ku isticmaali karto biyo ka yimid meelo kale oo la cabbo si loo yareeyo soo gaarista arsenik ee ku jira biyahaaga la cabbo.

Qota Ceel Cusub

Meelaha qaarkood, ceel cusub oo loo dhisay qaab ka duwan oo biyo keenaysa ayaa laga yaabaa inuu soo saaro biyo leh arsenik dabiici ah oo kii kale ka yar. Qodista ceel cusub ayaa waxay noqon kartaa fursad wanaagsan haddii aad horayba u rabtay inaad beddesho ceelkaaga jira sababo kale dartood. Waxay noqon kartaa mid ka qiimo jaban mustaqbalka fog marka loo eego joogtaynta nidaamka daaweynta. Si kastaba ha ahaatee, ceelka cusub ayaa laga yaabaa inuu isna lahaado arsenik dabiici ah xitaa haddii ceelka si habboon loo dhisay oo laga dhisay meel ku habboon.

Marka xogtayada ku saabsan dhacdada arsenic ay sii korodho, waxaanu wax badan ka baran doonaa hababka biyaha dhalinta ee ceelka ee aagga ee leh heerar sare ama hoose oo arsenik ah. Inkastoo aysan weli jiri doonin wax dammaanad ah, fursadaha dhismaha ceelal cusub oo leh heerarka arsenik oo hoose ayaa sii wanaajin kara meelaha qaardood. Macluumaad dheeraad ah oo ku saabsan dhismaha ceelka cusub si aad u hesho, la xiriir qandaraasle ceel iyo qodis oo shati haysta [Diiwaanka Ceel qodayaasha Qandaraaslaha ah](#) ([Licensed/Registered Well and Boring Contractor Directory](#))

(<http://www.health.state.mn.us/communities/environment/water/wells/lwc/index.html>) (kaliya waxaa lagu heli karaa Ingiriisiga wakhtigan) ama khabiirka ceelka ee xafiiska kuugu dhow ee MDH ([La xiriirida Qaybta Maaraynta Ceelasha](#))

(www.health.state.mn.us/communities/environment/water/wells/contactus.html) (kaliya waxaa lagu heli karaa Ingiriisiga wakhtigan)

Ku xiriirto nidaamka biyaha ee Bulshada (Community Public Water System)

Xaaladaha qaarkood waxaa laga yaabaa in ay suurtagal tahay in aad ku xiriirsato nidaamka biyaha ee bulshada. Dhammaan biyaha ee dadweynaha waxaa looga baaraa si joogto ah arsenik iyo wasakheeyayaasha kale waana in ay u hogaansamaan halbeegyada EPA.

Soo libso Biyaha Caagadaha

Haddii heerka arsenik ee ku jira biyaha ceelkaagu uu ka sarreeyo 10 µg/L, waxaad hoos u dhigi kartaa heerka arsenik ee biyahaaga la cabbo adiga oo isticmaalaya biyaha caagadaha. Waxaa muhiim ah in la ogaado in inkasta oo dhammaan nidaamyada biyaha la cabbo ee dadweynuhu ay tahay inay gaaraan halbeegyada EPA, ma jiro halbeeg keliya oo khuseeya dhammaan biyaha caagadaha. Taa baddalkeeda, biyaha caagaduhu waxay ku xiran yihiin halbeeyo kala duwan, taasoo ku xiran nooca biyaha caagada ah iyo halka lagu soo caagadeeyey. Halbeegyadani waxa laga yaabaa inay ka adag yihiin ama ka yara fudud yihiin kuwa nidaamka biyaha dadweynaha. Haddii aad ka fikireyso u beddelashada biyaha caagadaha, hubi in heerarka arsenik iyo wasakhda kale ee ku jira biyaha caagadaha ee aad dooratid ay ka hooseeyaan heerarka ku jira biyahaaga hadda. Shirkadda caagadaynta biyuhu waa inay awood u leedahay inay bixiso natiijooyinka baaritaanka biyahooda. Wax baran ka baro Biyaha Caagadaha (Bottled Water): Su'aalo iyo Jawaabo

(www.health.state.mn.us/communities/environment/water/docs/factsheet/bottlwtrsomali.pdf).

Biyaha leh arsenik waa Badbaado in loo Isticmaalo Waxyaabo kale (haddii aanu heerku ka sarraynin 500 µg/L.)

Maadama oo uuna maqaarkaagu si sahal ah u qaadanin arsenik, biyahaagu waxay badbaado u yihiin dhaqista weelka iyo dharka, cadayashada ilkaha, qubaysiga, mayrashada, iyo waraabinta dhirta (ay ku jiraan khudaarta).

Talooyin ku saabsan dhimista Soo Gaarista kale ee Arsenik

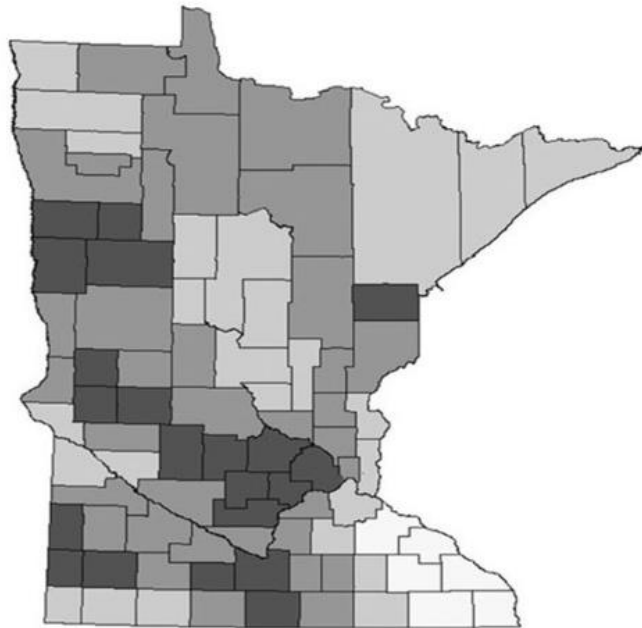
- Ha shidina alwaax lagu daweeay arsenik.
- Ka digtoonow maaddooyinka ku jira dawooyinka iyo dawooyin dhaqameedka.
- Dabool alwaax dhismaha ee lagu daaweeyey arsenik.
- Hubi in caruurta gacmahooda dhaqaan.
- Dhaq oo diir qudaarta lagu beeray dhulka hoostiisa (tusaale, baradhada, karootada).
- Cun in yar bariiska, haruurka badarka, ama cuntooyinka kale ee ay ku jirto arsenik.
- Ha isticmaalin sunta cayayaanka oo duugg ah iyo waxyaabaha kaabista ciidda ah haddii ay ku jirto arsenik.

Wax badan ka baro talooyinka loogu talagalay yaraynta soo gaarista kale Arsenik ([Arsenik iyo Adiga](https://sites.dartmouth.edu/arsenicandyou/) [Arsenic and You](https://sites.dartmouth.edu/arsenicandyou/) (<https://sites.dartmouth.edu/arsenicandyou/>) (kaliya waxaa lagu heli karaa Ingiriisi wakhtigan).

Arsenik ku jira biyaha Minnesota

Arsenic ayaa laga helay boqolkiiba 40 ceelasha cusub ee laga qoday Minnesota laga soo bilaabo 2008. (Heerka arsenik ee la helo inta badan waa 2 µg/L.) Qiyaastii 10 boqolkiiba ceelasha gaarka loo leeyahay ee Minnesota waxay leeyihiin heerar arsenik oo ka sarreeya 10 µg/L, xadka biyaha dadweynaha.

Arsenik waxay ku jirtaa biyaha dhulka hoose ee gobolka oo dhan, laakiin waxay u badan tahay meelaha qaarkood. Khariidadda hoose waxay muujinaysaa halka arsenik laga helo inta badan ceelasha Minnesota. (Khariidadda lagu sameeyay xogta MDH ee 2008-2017.) Waxaad wax badan oo ku saabsan heerarka arsenik ka baran kartaa ceelasha gaarka loo leeyahay ee degmadaada [Xogta MN: Private Wells-Arsenic](https://mndatamaps.web.health.state.mn.us/interactive/wells.html) (<https://mndatamaps.web.health.state.mn.us/interactive/wells.html>) (kaliya waxaa lagu heli karaa Ingiriisi wakhtigan)



Heerarka boqolkiiba inta ku jirta Biyaha Ceelka Cusub Arsenik laga helay



Habka barafka u dhexmaray Minnesota ayaa wuxuu saameeyaa halka arsenik laga helo iyadoo lakabyo ah iyo biyaha dhulka hoostiisa. Heerarka arsenik ee ku jira ceelasha ku yaalla meelo isu dhow ayaa kala duwanaan kara Meelaha qaarkood waxay leeyihiin heerarka arsenik oo sarreeya illaa 350 µg/L. Ka baro wax badan oo ku saabsan arsenik-ga ku jira biyaha ceelasha gaarka loo leeyahay adiga oo u maraya [Daraasadda The Minnesota Arsenic Study \(2000\)](http://www.health.state.mn.us/communities/environment/hazardous/investigations.html#MARS) (www.health.state.mn.us/communities/environment/hazardous/investigations.html#MARS) (kaliya waxaa lagu heli karaa Ingiriisi wakhtigan).

Macluumaadka Taariikhda asalkiisa

Dadka intooda badan, cuntooyinka iyo biyaha ayaa ah meelaha ugu badan ee ay arsenik kasoo gaarto. Waxaa jira laba nooc oo arsenik ah

- *Arsenik aan orgaanik* ahayn waa nooca laga helo biyaha la cabbo waana nooca arsenik halis badan. Waxaa sidoo kale laga helaa bariiska, badarka siiriyalka iyo cuntooyinka kale Waxay samaysantaa marka ay arsenik isqabsadaan biraha iyo curiyeyaasha kale ee aan ahayn kaarboon.

- *Arsenik dabiiciga ah* waa nooca ugu badan ee arsenik ee laga helo cuntada. Waxay ku badan tahay kalluunka iyo kalluunka qolofleyda (shellfish), wayna u halis yar tahay caafimaadka marka loo eego arsenik-ga aan orgaanik ahayn. Waxay samaysantaa marka ay arsenik isqabsadaan kaarboon.

Iyadoo inta badan arsenik-ga deegaanka Minnesota ay si dabiici ah ku yimaadaan, qaar ayaa waxay ka yimaadaan waxqabadka aadanaha. Arsenik waxay ahayd qayb ka mid ah sunta cayayaanka qaarkood waxaana loo isticmaali jiray ilaalinta alwaax waayadii hore.

Biyaha ceelkayga ma in aan ka baaraa wax aan arsenik ahayn?

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 keena 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).
- **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).
- **Sunta rasaasta 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).
- **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/manganese.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\Arsenic in Well Water 06/15/2023 - Somali