



Kua hlau Iron nyob hauv cov dej hauv lub Qhov Dej Khawb

Tej co av thiab cov pob zeb nyob hauv lub xeev Minnesota muaj tej menyuam tooj hlau me me aiv es muaj ntau heev nyob rau cov hmoov hlauv Iron. Thaum ntuj los nag thiab cov daus yaj rau saum npoo av thiab cov dej xau mus rau cov av thiab pob zeb es ua rau tsim muaj cov hmoov hlau iron, hmoov hlau iron yeej yaj tau hauv cov dej. Qee zaus, hmoov hlau iron yeej muaj thaum cov hlau es npog lub qhov dej lwj thiab xeb thiab kav dej lwj. Zoo ib yam li cov hmoov lau iron ntawm ib lub thoob hlau es xeb lawm thaum muaj dej nyob hauv thiab muaj cua oxyten, cov hmoov hlau iron minerals es nyob hauv dej hloov ua xeb thiab lo tej tee rau cov kav dej thiab cov cav ntxhua khaub ncaws.

Kua hlau Iron kuj pab rau lwm cov kab mob me me loj hlob tuaj

Cov hmoov hlau iron nyob hauv dej feem ntau yeej tsis muaj kev phom sij rau kev noj qab haus huv. Koj lub cev yuav tsum muaj hmoov hlau iron mas thiaj li xa tau cua oxygen mus rau hauv koj cov ntshav. Feem ntau cov hmoov hlau iron los ntawm cov zaub mov, vim tias lub cev txais tsis tshua tau cov hmoov hlau iron los ntawm cov dej.

Cov hmoov hlau iron tej zaum kuj ua rau muaj kev txhawj xeeb yog tias cov kab mob phom sij nkag tau rau hauv lub qhov dej khawb. Tej co kab mob me me es phom sij yuav tsum koj muaj cov hmoov hlau iron mas lawv thiaj li loj hlob. Yog tias muaj cov hmoov hlau iron nyob rau hauv cov dej, nws yuav nyuaj zog kom tshem tau cov kab mob es phom sij.

Yuav ua cas thiaj li paub tias muaj kua hlau Iron

Saj cov dej

Cov hmoov hlau iron ua rau cov dej qab li hlau thiab ua rau zaub mov thiab dej qab txawv.

Xim

Cov hmoov hlau iron nyob hauv cov dej ua rau:

- Muaj xim daj, liab, los yog xim av es tsuas tes tee rau cov tais diav, cov cav ntxhua khaub ncaws, thiab cov kav dej.
- Cov dej tshuaj yej thiab cov kas fes muaj ntau xim thaum nyob ze rau cov teeb ci ci.
- Cov qos hloov ua xim dub.

Txhaws

Cov hmoov hlau iron yeej txhaws tau lub qhov dej khawb, lub cav nqus dej, cov xaiv yas ywg nyom, thiab lwm yam cuab yeej ntev ntev mus.

Kuaj seb puas muaj kua hlau Iron

Xim daj los yog xim liab ntawm cov dej feem ntau qhia tau tias muaj Cov hmoov hlau iron. Txawm li ntawd los, ib chaw kuaj dej yeej qhia tau meej meej tias cov dej muaj Cov hmoov hlau iron ntau npaum li cas kiag, es yog ib qho kev pab rau koj txiav txim es hom kev xaiv los tua cov dej zoo tshaj plaws yog hom twg. Ntxiv mus txog qhov es kuaj Cov hmoov hlau iron, nws yeej pab zoo kom kuaj seb muaj cov hmoov twg es khov rau hauv cov dej (harness), pH, alkalinity, thiab cov kab mob iron bacteria.

Qhia kom paub thiab nkag siab: Cov dej es muaj hmoov hlau siab tshaj 0.3 milligrams per liter (mg/L) mas feem ntau muab xav tias tsis huv. Cov hmoov hlau feem ntau muaj qis tshaj 10 mg/L hauv cov dej.

Lub tuam tsev Minnesota Department of Health (MDH) tau hais tias xav kom koj siv cov chaw kuaj kom muaj ntaub ntawv pov thawj los kuaj koj cov dej. Tiv tauj ib lub chaw es muaj ntaub ntawv pov thawj kom tau lub thawv thiab cov ntaub ntawv cob qhia kom paub kuaj, los yog nug koj lub zos county es pab rau faim kev noj qab haus huv rau pej zeem seb lawv puas muaj kev pab kuaj cov qhov dej khawb.

Tshawb nrhiav [Cov Chaw Muaj Daim Ntawv Kuaj Dej Hauv Minnesota Txais Cov Dej Hauv Lub Qhov Dej Khawb Muaj Tswv Kuaj \[PDF\]](https://www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/labmap.pdf)

(www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/labmap.pdf) (tsuas muaj rau hom lus Askiv lub sij hawm no xwb).

Tswj kom txhob muaj kua hlau Iron

Tua kom mob hauv cov dej tom tsev yog ib lub tswv yim feem coob ua kom tswj tau cov hmoov hlau iron nyob hauv cov dej. Koj yeej mus yuav tau ib lub cav tua kob mob hauv cov dej es muab nruab rau cov dej ntawm koj tus kheej, los yog kom ib tug kws tua kob mob ntawm cov dej pab koj nruab. Yog tias koj hais kom ib tug kws tua kob mob ntawm cov dej pab koj, yuav tsum saib kom zoo kom lawv yog tus neeg kho kais dej es muaj daim ntawv tso cai los yog daim ntawv tso cai rau tua kab mob rau cov dej es yog siv Lub tuam tsev [Minnesota Department of Labor and Industry's License tshawb nrhiav lawm daim ntawv tso cai](https://www.dli.mn.gov/license-and-registration-lookup) (<https://www.dli.mn.gov/license-and-registration-lookup>) (tsuas muaj rau hom lus Askiv lub sij hawm no xwb). Nyob ntawm seb qhov teeb meem yog dabtsi, nws kuj muaj lwm txoj hauv kev thiab.

- **Siv lwm qhov chaw txawv kom tau dej siv** es muaj hmoov hlau qis qis, xws li cov dej tso tuaj rau pej xeem siv los yog ib lub qhov dej khawb es nqus tau dej los ntawm lwm txoj hauv kev.
- **khawb li qhov dej tshiab.** Nco ntsoov tias nws yog ib qho nyuaj kom twv tau seb hom hmoov hlau iron twg muaj nyob rau lub qhov dej khawb tshiab. Cov qhov dej khawb nyob ib puag ncig yog yeej qhia tau rau koj, tabsis cov hmoov hlau iron ntawm ob lub qhov dej nyob sib ze yeej muaj cov hmoov hlau iron sib txawv. Feem ntau, cov qhov dej tshau es tshau ntiav dua yeej muaj cov hmoov hlau iron tsawg dua tabsis lawv ho yuav muaj cov khes mis nitrate los yog muaj cov khes mis tsis huv tsuas rau.

Tua cov kab mob hauv cov dej

Yuav tua kom tau cov hmoov hlau iron hauv cov dej zoo mas nyob ntawm seb hom hmoov hlau iron twg yog hom es pom muaj, hom dej dabtsi dabtsi, thiab hom qhov dej khawb zoo li cas thiab tau dej siv li cas. Nws yog ib qho zoo es kom ib tug kws tua kab mob hauv cov dej pab koj nrhiav seb txoj hauv kev twg zoo tshaj.

Hom kua hlau Iron

- **Kua hlau Ferrous iron** (“Cov dej ntshiab ntsiab”): Cov dej tawm hauv tus kais dej los ntshiab ntshiab tabsis tig ua xim liab los yog xim suab thaj tom qab cia nws nyob ib chim.
- **Kua hlau Ferric iron** (“cov dej liab liab”): Cov dej yog xim liab los yog xim daj thaum tawm plaws hauv tus kais dej los.
- **Kua hlau Organic iron**: Feem ntau cov dej yog xim daj los yog xim suab thaj tabsis tej thaum kuj tsis muaj xim.

Tua cov kab mob ntawm cov dej muaj Hmoov Hlau Ferrous (Dej-Ntshiab) Iron

Lub thawv Ntim Ntsev (water softeners) thiab **lub lim cov dej muaj hmoov hlau iron filters** (xws li lub lim hu ua manganese greensand filter) yeej ua tau hauj lwm zoo los tshem tawm cov hmoov hlau iron ntawm cov dej ntshiab. Lub thawv Ntim Ntsev (water softeners) yog hom es tib neeg siv heev dua. Cov chaw tsim cov cuaj yeej nov qhia tuaj tias lub thawv Ntim Ntsev (water softeners) yeej tshem tau ntau li 10 mg/L. Txawm li ntawd los, 2 to 5 mg/L qhov es tshem tau ntau tshaj. Lub lim dej hu ua manganese greensand filter yeej pab tau zoo rau cov dej es muaj siab li ntawm 10 to 15 mg/L.

lub thawv Ntim Ntsev (water softeners) tshem tau hmoov me me es khov uake xws li calcium thiab magnesium. Cov hmoov hlau iron yuav ua rau lub thawv Ntim Ntsev (water softeners) txhaws thiab yuav tsum tau muab cov es khub ntawm tshem tawm lub thawv ntim ntsev es yog txuag dej tawm rov qab. Ib lub thawv Ntim Ntsev (water softeners) yuav tsis ua hauj lwm zoo yog cov dej es muaj tej yam khov rau hauv es qis dua thiab muaj cov hmoov hlau iron siab los yog lub thawv ntim ntsev raug cua, xws li yog lub hu ua air-charged “lub thawm ntim cua siv txhuas ua (galvanized pressure tank).”

Cov khes mis Chemical oxidation es siv cov tshuaj chlorine los yog hydrogen peroxide thiab cov lim dej kuj siv thiab. Txawm li ntawm los, siv kom ntau raws li qhia mas yog ib qho nyuaj thiab yuav muaj kev phom sij rau kev noj qab haus huv yog tias tsis paub siv ntau raws li kev cob qhia.

Tua cov kab mob ntawm cov dej muaj Hmoov hlau Ferric (Dej-Liab) Iron

- **Lub cav lim cov hmoov hlau iron** (xws li lub lim dej hu ua manganese greensand filter) yeej pab tau zoo rau tua cov dej - xim liab es muaj hmoov hlau iron siab li ntawm 10 to 15 mg/L.
- **Kom dim pa mus hauv av (Aeration)** (Xav cua mus rau) los yog cov khes mis chemical oxidation (feem ntau ntiv cov tshuaj chlorine es yog cov calcium los yog sodium hypochlorite) tag cas siv lub lim dej kuj yog txoj hauv kev yog tias muaj cov hmoov hlau siab dua li 10 mg/L.

- Cov cav lim dej xws li **Sediment filter, carbon filter**, los yog lub **thawv rau ntsev (water softeners)** yeej tshem tau qhov es muaj cov hmoov hlau iron tsawg tsawg, tabsis cov hmoov hlau iron nov yuav txhaws cov cav no sai sai.

Tua cov kab mob ntawm cov dej muaj Hmoov hlau Organic Iron

Cov hmoov hlau organic iron thiab tannins ua rau tua cov kab mob ntawm cov dej nyuaj. Cov hmoov hlau organic iron thiab tannins yeej ua rau qeeb los yog tiv thaiv cov hmoov hlau kom txhob muaj cua iron oxidation, yog li lub thawv ntim ntsev water softeners, qhov xav cov cua mus rau (aeration), thiab cov lim hmoov hlau iron kuj yuav ua hauj lwm tsis tau zoo. Qhov es **Chemical oxidation tag ces siv lub lim dej** tej zaum kuj yuav yog ib txoj hauv kev.

Kev lim dej Distillation los yog **reverse osmosis** yeej tshem tawm tau cov hmoov hlau iron tsis hais yog hom twg. Yog tias cov dej muaj hmoov hlau iron ntau, nws yuav txhaws cov cuab yeej ntawd sai sai, yog li ntawd lub cuab yeej tua tag nrho cov dej siv hauv lub tsev yuav zoo dua.

Cov kab mob kua hlau Iron thiab tua kab mob hauv lub qhov dej khawb

Cov kab mob hmoov hlau iron bacteria yog ib co kab me me es qhov muag saib tsis pom noj cov hmoov hlau iron koj lawv muaj sia. Yog li ntawd, lawv tsim ib co hmoov hlau thiab ib co kua nplua npua es yog xim liab los yog xim av hu ua “biofilm.” Cov kab me me es qhov muag saib tsis pom nov tsis muaj kev phom sij rau tib neeg, tabsis yuav ua rau qhov teeb meem es muaj hmoov hlau iron nov phem dua. Cov kab me me es qhov muag saib tsis pom yeej muaj nyob rau cov av es ntiav ntiav thiab cov dej hauv av es nyob ntiav ntiav, thiab lawv nkag tau mus rau cov qhov dej khawb thaum tab tom khawb lub qhov dej los yog kho lub qhov dej.

Kawm kom paub ntau dua txog yuav tiv thaiv li cas, tshem tawm lis cas, thiab yuav tua cov kab mob iron baterian ntawm [Kab Mob Iron Bacteria hauv cov dej ntawm lub qhov dej khawb in Well Water](#)

(www.health.state.mn.us/communities/environment/water/wells/waterquality/ironbacteria.html) (tsuas muaj rau hom lus Askiv lub sij hawm no xwb).

Kuv puas yauv tsum tau kuaj kuv cov dej hauv qhov dej khawb seb puas muaj lwm yam khes mis es tsis yog cov kua hlau Iron?

Yuav tsum tau kuaj. Qhov es yeej cia li muaj cov khes mis los ntawm thas mab xaj thiab tej yam es tiv neeg ua yeej tsuas tau rau cov dej hauv qhov dej khawb thiab ua rau muaj kev mob nkeeg rau lub cev sai sai thiab ntev ntev lawm yav tom ntej. Kuaj cov dej hauv koj lub qhov dej yog tib txoj kev es nrhiav tau seb yam tshuaj khes mis twg es tsuas rau cov dej hauv av heev tshaj plaws hauv lub xeev Minnesota; koj yeej saj tsis tau, tsis pom, los yog hnia tsis muaj tus ntshiab rau feem ntau ntawm cov khes mis es tsuas rau cov dej. Lub tuam tsev saib kev noj qab haus huv hu ua Minnesota Department of Health tau hais tias xav kom kuaj seb puas muaj:

- **Cov kab mob Coliform txhua txhua xyoo** thiab lub sij hawm twg cov dej hloov es tsw txawv, los yog xim txawv. Cov kab mob coliform yeej qhia tau tias cov kab mob me me hu ua microorganisms tej zaum yeej muaj nyob rau hauv koj cov dej. Saib ntawm [Kev Puaj Phais Txog Civ Kab Mob hauv cov qhov Dej Khawb](#)

(www.health.state.mn.us/communities/environment/water/wells/waterquality/bacteriahmong.pdf).

- **Tshuaj ntsev Nitrate txhua txhua xyoo.** Cov menyuam mos ab noj raj mis muaj hnuv nyoog qis tshaj 6 lub hlis mas muaj kev phom sij loj heev yog tias cov dej kuaj tau muaj cov khes mis nitrate es siab tshaj 10 milligrams tau ib liter hauv cov jej haus. Saib hauv Khes mis Nitrate nyob hauv cov qhov dej khawb (www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/nitratehmong.pdf).
- **Khes mis Arsenic tsawg kawg mas kuaj ib zaug.** Ntau li 40 paws xees ntawm cov qhov dej tshau hauv lub xeev Minnesota mus cov khes mis arsenic nyob hauv cov dej. Haus cov dej muaj khes mis arsenic rau hauv ntev ntev mus yuav ua rau txo qhov kev ntse rau cov menyuam yaus thiab muaj kev pom sij ntxiv rau kab mob khees xaws, ntsav qab zig, kab mob siab, thiab muaj teeb meem rau daim tawv nqaij rau cov neeg laus. Saib Khes mis Arsenic nyob hauv cov dej hauv Qhov Dej Khawb (www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/arsenichmong.pdf).
- **Kua txhuas Lead tsawg kawg kuaj ib zaug.** Lub qhov dej khawb thiab cov chaw tso dej tuaj tej zaum muaj tej co khoom siv es muaj hmoov txhuas nyob rau hauv lawv, thiab cov hmoov txhuas nov yeej nkag tau mus rau hauv cov dej haus. Cov hmoov txhuas yeej ua tau rau puas hlwb, raum tuag, thiab puas tsuaj rau qhov es tswj kom tus kheej txhob qaij doj qaij de. Hmoov txhuas kuj ua tau rau qhov kev loj hlob qeeb los yog ua rau kawm tsis tau ntawv zoo, tus cwj pwm tsis zoo, thiab teeb meem txog kev hnov lus. Saib cov Hmoov Txhuas hauv Cov Kav Dej (www.health.state.mn.us/communities/environment/water/docs/wells/waterquality/leadhmong.pdf).
- **Cov hmoov tooj Manganese ua ntej ib tus menyuam mos ab haus cov dej.** yog muaj cov khes mis manganese siab yuav tsim teeb meem rau kev cim xeeb, nyob tsis tswm, thiab tswj tsis tau kom tus kheej sawv tus yees. Nws kuj yuav ua tau rau cov menyuam mos ab thiab cov menyuam yaus muaj teeb meem txog kev kawm ntawv thiab teem meem txog tus cwj pwm. Saib hauv cov hmoov tooj Manganese hauv cov Dej Haus (www.health.state.mn.us/communities/environment/water/contaminants/manganese.html). (Tsuas muaj rau hom lus Askiv lub sij hawm no xwb).

Lwm yam es tsuas tej thaum tshwm sim nyob rau cov dej es muaj tswv, tabsis kuj tshwm sim tsawb tshaj li cov es tsuas tau teev sab saud. Xav txog qhov es kuaj rau:

- **Cov khes mis volatile organic chemicals** Yog tias koj lub qhov dej khawm nyob ze cov thawm ntim roj los yog ze qhov chaw ua lag luam loj los yog ua hauj lwm txua hlau.
- **Cov chaw es siv tshuaj khes mis tua rau liaj teb** Yog tias koj lub qhov dej khawb ntiav ntiav thiab nyob ze cov teb cog qoob loo los yog qhov chaw siv cov tshuaj khes mis tua qoob loo los yog nyob ze ib cheeb tsam ntawm qhov chaw es muaj pob zeb tawg yooj yim. (xws li cov pob zeb limestone hauv av)
- **Tshuaj Fluoride** yog tias cov menyuam los yog cov tub ntxhais hluas haus cov dej.