HB

357

SFIN

FILE

REPORTED OUT
APR 2 2 2006
SENATE FINANCE COMMITTEE

SENATE FINANCE COMMITTEE REPORT

DATE: 3/1/06

FURTHER:

DATE TURNED IN TO OFFICE: 22April2006

Finance Committee considered CS FOR HOUSE BILL NO. 357(FIN)

HB 357 STATUTORY REFERENCES TO DISABILITIES

"An Act updating the terminology in statutes for persons with disabilities; and providing for an effective date."

and recommends:

[ ] be **replaced** with _____ **CS** _____ (_____)

[ ] adopt **previous** _____ **CS** _____ (_____)

[ ] attached amendment(s)

[✓] adopt Letter of Intent by House Finance Committee

[ ] further referral to _____ Committee

CS Senate Bill:
[ ] Same Title
[ ] New Title

SCS House Bill:
[ ] Same Title
[ ] Technical Title Change
[ ] New Title w/ SCR #_____

NEW FISCAL NOTE(S):

Department	Date	Fiscal	Ind.	Zero	FN#

PREVIOUS FISCAL NOTE(S):

Department	Date	Fiscal	Ind.	Zero	FN#
H&SS	1/20/2006			✓	#1
L&WD	1/19/2006			✓	#2

[ ] **APPROPRIATION - no fiscal note**

SIGNATURES AND RECOMMENDATIONS:	DO PASS	DO NOT PASS	NO REC	AMEND
	✓			
	✓			
	✓			
	✓			
	✓			
COCHAIR:	✓			
COCHAIR:	✓			

REPORTED OUT
APR 22 2006
SENATE FINANCE COMMITTEE

SENATE FINANCE COMMITTEE REPORT

DATE: 3/1/06

FURTHER:

DATE TURNED IN TO OFFICE: 22 April 2006

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COCHAIR:	✓			
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ALASKA STATE LEGISLATURE
HOUSE FINANCE COMMITTEE

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State Capitol, Juneau, Alaska 99801-1182

Letter of Intent
House Finance Committee
CSHB 357 (FIN)
Adopted February 13, 2006

The legislature intends to modernize the terminology in statutes in recognition of the ability of individuals with disabilities to contribute to society and to the state.

The legislature does not intend to alter in any manner the substantive provisions of the statutes in which the terminology is changed under this Act, including provisions relating to the Alaska Mental Health Trust, provisions defining who is a trust beneficiary arising under the Alaska Mental Health Enabling Act of 1956, or provisions relating to the mental health trust settlement in Weiss v. State, 4FA-82-2208 Civil, under ch. 66, SLA 1991; chs. 5 and 6, FSSLA 1994; and chs. 1 and 2, SSSLA 1994.

The Legislature does not intend for the provisions in this Act to alter the effect of any statute pertaining to compliance with federal law or state law relating to access for individuals with disabilities or rights for individuals with disabilities.

K. Meyer

Representative Kevin Meyer
Co-Chairman, House Finance Committee

Adopted by the House
February 22, 2006

REPORTED OUT
APR 2 2 2006
SENATE FINANCE COMMITTEE

FISCAL NOTE

STATE OF ALASKA
2006 LEGISLATIVE SESSION

Fiscal Note Number: 1
Bill Version: CSHB 357(HES)
(H) Publish Date: 2/1/06
Revision Date/Time (Note if correction):
Dept. Affected: Health & Social Services

Title: UPDATING TERMINOLOGY IN STATUTES FOR PERSONS WITH DISABILITIES
RDU: Senior and Disabilities Svcs
Component: Community DD Grants

Sponsor: WILSON
Requester: HOUSE (HES)
Component No.: 309

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

OPERATING EXPENDITURES	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
Personal Services						
Travel						
Contractual						
Supplies						
Equipment						
Land & Structures						
Grants & Claims						
Miscellaneous						
TOTAL OPERATING	0.0	0.0	0.0	0.0	0.0	0.0
CAPITAL EXPENDITURES						
CHANGE IN REVENUES (0)						

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts						
1003 GF Match						
1004 GF						
1037 GF/Mental Health						
Other(Specify Type-do not abbreviate)						
Other(Specify Type-do not abbreviate)						
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0

Estimate of any current year (FY2006) cost:
Mark this box (X) if funding for this bill is included in the Governor's FY 2007 budget proposal:

POSITIONS

Full-time						
Part-time						
Temporary						

ANALYSIS: *(Attach a separate page if necessary)*

The Division of Senior and Disabilities Services does not anticipate any financial impact as a result of HB 357.

Prepared by: Rod Moline, Director — Phone 465-3372
Division: Senior & Disabilities Services — Date/Time 01/20/2006
Approved by: Karleen Jackson, Commissioner — Date 01/20/2006
Agency: Department of Health and Social Services

(Revised 9/7/2005 OMB)

COMMITTEE COPY

REPORTED OUT
APR 2 2 2006
SENATE FINANCE COMMITTEE

FISCAL NOTE

STATE OF ALASKA
2006 LEGISLATIVE SESSION

Fiscal Note Number: 2
Bill Version: CSHB 357(HES)
(H) Publish Date: 2/1/06

Revision Date/Time (Note if correction):
Title: Statutory References to Disabilities

Sponsor: Representative Wilson
Requester: House HES

Department: Labor and Workforce Development
RDU: Vocational Rehabilitation
Component: Vocational Rehabilitation Administration
Component Number: 202

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

OPERATING EXPENDITURES	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
Personal Services						
Travel						
Contractual						
Supplies						
Equipment						
Land & Structures						
Grants & Claims						
Miscellaneous						
TOTAL OPERATING	0.0	0.0	0.0	0.0	0.0	0.0
CAPITAL EXPENDITURES						
CHANGE IN REVENUES ( )						

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts						
1003 GF Match						
1004 GF						
1005 GF/Program Receipts						
1037 GF/Mental Health						
Other (Specify Type--Do not abbreviate)						
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0

Estimate of any current year (FY2006) cost: None
Mark this box (X) if funding for this bill is included in the Governor's FY 2007 budget proposal:

POSITIONS

Full-time						
Part-time						
Temporary						

ANALYSIS: *(Attach a separate page if necessary)*

There is no anticipated financial impact to the department as a result of this legislation.

Prepared by: Gale Sinnott, Director
Division: Division of Vocational Rehabilitation
Phone: 465-6927
Date/Time: 1/17/06 2:55 PM

Approved by: Greg O'Claray, Commissioner
Agency: Department of Labor and Workforce Development
Date: 1/17/2006

(Revised 9/7/2005 OMB)

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REPORTED OUT
APR 2 2 2006
SENATE FINANCE COMMITTEE

SENATE FINANCE COMMITTEE REPORT

DATE: 3/1/06

FURTHER:

DATE TURNED IN TO OFFICE: 22 April 2006

Finance Committee considered CS FOR HOUSE BILL NO. 357(FIN)

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and recommends:

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	✓			
	✓			
	✓			
	✓			
	✓			
COCHAIR:	✓			
COCHAIR:	✓			

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Letter of Intent
House Finance Committee
CSHB 357 (FIN)
Adopted February 13, 2006

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The legislature does not intend to alter in any manner the substantive provisions of the statutes in which the terminology is changed under this Act, including provisions relating to the Alaska Mental Health Trust, provisions defining who is a trust beneficiary arising under the Alaska Mental Health Enabling Act of 1956, or provisions relating to the mental health trust settlement in Weiss v. State, 4FA-82-2208 Civil, under ch. 66, SLA 1991; chs. 5 and 6, FSSLA 1994; and chs. 1 and 2, SSSLA 1994.

The Legislature does not intend for the provisions in this Act to alter the effect of any statute pertaining to compliance with federal law or state law relating to access for individuals with disabilities or rights for individuals with disabilities.

K. Meyer

Representative Kevin Meyer
Co-Chairman, House Finance Committee

Adopted by the House
February 22, 2006

ALASKA STATE LEGISLATURE

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Juneau, AK 99801-1182
Phone: (907) 465-3824
1-800-686-3824
Fax: (907) 465-3175

REPRESENTATIVE PEGGY WILSON
HOUSE DISTRICT 2

SPONSOR STATEMENT

CSHB 357 (FIN) "Updating the terminology in statutes for persons with disabilities"

After the Americans with Disabilities Act of 1990, most states modified their statutes to reflect a positive reference- changing the word "handicapped" to "person with a disability". This bill changes all Alaska State Statutes to rid them of this archaic reference that has negative and demoralizing connotations in reference to a person's ability and potential. Using "person with a disability" reflects language that is in Federal legislation- the Federal Workforce Investment Act, the American's with Disabilities Act, the Civil Rights Act of 1991; The Individuals with Disabilities Education Act (IDEA) and the Rehabilitation Act of 1973 as amended in 1992 and 1998.

These changes are being proposed in consultation with the Department of Labor, other state agencies, and along with the Governor's Council on Disabilities and Special Education. There is support for this bill from numerous other organizations such as the South-East Alaska Independent Living Center, which represent people with disabilities. This bill is not designed to modify any existing requirements or exemptions, nor will it be changing any existing requirements or exemptions with the new terminology. This bill was created to serve the constituents of everyone across the state that are affected by this existing negative and demeaning terminology.

I ask for your support of CSHB 357 (FIN) to update and modernize the language that is in our Alaska Statutes.

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HOUSE FINANCE COMMITTEE

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Kevin Meyer

Representative Kevin Meyer
Co-Chairman, House Finance Committee

LEGAL SERVICES

DIVISION OF LEGAL AND RESEARCH SERVICES
LEGISLATIVE AFFAIRS AGENCY
STATE OF ALASKA

(907) 465-3867 or 465-2450
FAX (907) 465-2029
Mail Stop 3101

State Capitol
Juneau, Alaska 99801-1182
Deliveries to: 129 6th St., Rm. 329

MEMORANDUM February 24, 2006

SUBJECT: Sectional analysis of CSHB 357(FIN), a bill updating the terminology in statutes for persons with disabilities (Work Order No. 24-LS1407\Y)

TO: Representative Peggy Wilson
Attn: Aaron

FROM: TB
Theresa Bannister
Legislative Counsel

You have requested a sectional summary of the above-described bill. As a preliminary matter, note that a sectional summary of a bill should not be considered an authoritative interpretation of the bill and the bill itself is the best statement of its contents.

Section 1. Amends AS 14.30.630(b) to replace two occurrences of "handicapped" with forms of "disabled" and to adjust the language listing students with disabilities.

Section 2. Amends AS 18.15.210 to replace "handicaps" with "disabilities."

Section 3. Amends AS 18.55.130(b) to replace "handicaps" with "disabilities."

Section 4. Amends AS 23.15.080 to replace the occurrences of "handicapped" with a form of "disability."

Section 5. Amends AS 23.15.090 to replace "handicapped" with "with disabilities" and "severely handicapped" with "with severe disabilities."

Section 6. Amends AS 23.15.100 to replace "handicapped" and "severely handicapped" with "with disabilities" and "with severe disabilities."

Section 7. Amends AS 23.15.125(e)(2) to delete a reference to a "handicapped individual."

Section 8. Amends AS 23.15.133(a) to replace "severely handicapped" with forms of "severe disability" and to make a technical correction of a citation to federal law.

Section 9. Amends AS 23.15.134 to replace "severely handicapped" with "with severe disabilities."

Section 10. Amends AS 23.15.170 to replace "handicapped " with "with a disability."

Section 11. Amends AS 23.15.180(b) to replace "severely handicapped" with "with a severe disability."

Section 12. Amends AS 23.15.210(1) and (3) to make technical changes. Amends AS 23.15.210 to move the definition of "individual having a physical or mental disability" from (7) to (5). Amends (6) to replace the defined term, "handicapped individual," with "individual with a disability," makes a technical change, and changes "handicap" to "barrier." Rewrites former (8) to replace the reference to "severely handicapped " with "severe disability" and makes a stylistic change. Moves the definition for "severely handicapped person" at (10) to the definition of "person with a severe disability" at the new (8). In (11) and (12), replaces "handicapped" with forms of "disability."

Section 13. Amends AS 29.60.120(f)(1) to replace a reference to "the mentally or physically handicapped" with "persons with mental or physical disabilities."

Section 14. Amends AS 35.10.015(a) to replace "the physically handicapped" with "persons with disabilities and by the" and to make related stylistic changes.

Section 15. Amends AS 35.10.015(c) to replace "physically handicapped" with "persons with disabilities and by" and "person with a disability or an." Makes some stylistic changes.

Section 16. Amends AS 35.10.015(d) to replace "physically handicapped" with "persons with disabilities and by." Makes some stylistic changes.

Section 17. Amends AS 35.10.015(e) to replace "physically handicapped" with "persons with disabilities and by." Makes some stylistic changes.

Section 18. Amends AS 36.30.040(b)(16) to replace "handicap" with "disability."

Section 19. Amends AS 36.30.990(11) to replace "handicaps" with "barriers."

Section 20. Amends AS 39.25.160(f) to replace 'handicap" with 'disability" and to make a stylistic change.

Section 21. Amends AS 42.21.027(b)(10) to replace "handicapped" with "with disabilities."

Section 22. Amends AS 47.14.100(d)(1) to replace "physically or mentally handicapped" with "with physical or mental disabilities" and adds "and."

Section 23. Amends AS 47.75.060(2) to make a stylistic change, to replace "the physically handicapped" with "persons with physical disabilities," and to adjust the language listing persons with disabilities, including disorders.

Section 24. Amends AS 47.80.010 to replace forms of "handicap" with forms of "disability."

Section 25. Amends AS 47.80.020 to replace "handicaps" with "disabilities."

Section 26. Amends AS 47.80.040(f) to replace "handicaps" with "disabilities."

Section 27. Amends AS 47.80.100(a) to replace "handicaps" with "disabilities."

Section 28. Amends AS 47.80.100(b) to replace "handicaps" with "disabilities."

Section 29. Amends AS 47.80.110(6) to replace "handicap" with "disability."

Section 30. Amends AS 47.80.120 to replace "handicap" and "handicapped" with words and phrases using "disabilities."

Section 31. Amends AS 47.80.130(a) to replace "handicaps" with "disabilities."

Section 32. Amends AS 47.80.150(a) to replace "handicap" with "disability."

Section 33. Amends AS 47.80.150(b) to replace "handicap" with "disability."

Section 34. Amends AS 47.80.150(e) to replace "handicap" with "disability."

Section 35. Amends AS 47.80.150(f) to replace "handicap" with "disability."

Section 36. Amends AS 47.80.900(3) to replace "handicaps" with "disabilities" and to make a technical change.

Section 37. Amends AS 47.80.900(4) to replace "the handicapped" with "persons with disabilities."

Section 38. Amends AS 47.80.900(5) to replace forms of "handicap" with "disability."

Section 39. Amends AS 47.80.900(6) to replace forms of "handicap" with "disability" and "impaired."

Section 40. Amends AS 47.80.900(8) to replace "handicaps" with "disabilities."

Section 41. Amends AS 47.80.900(9) to replace forms of "handicap" with "disability" and "disabled."

Section 42. Directs the revisor of statutes to change the catchline for AS 47.80.100. Directs the regulations attorney to change versions of the term "handicap" in the Alaska Administrative Code in a manner consistent with this bill.

Section 43. Gives the bill an immediate effective date.

If I may be of further assistance, please advise.

TLB:ljw
06-095.ljw

STUDENTS WITH DISABILITIES: A VOCABULARY LESSON

Handicap vs. Disability

The language in Section 504 uses the generic term "handicap," referring in later paragraphs to the conditions rendering a person handicapped; those individuals for whom the regulations were written strongly prefer the term "disability," making a clear distinction between the two words. A **disability** is a physical or mental impairment that substantially limits one or more major life activities (functions such as caring for oneself, performing manual tasks, walking, seeing, hearing, speaking, breathing, learning and working). The disability can be caused by a disease, accident or defective gene, but it is a residual effect, not the disease or injury itself. Only when the disability interacts with a particular set of environmental conditions is the person **handicapped**. A flight of stairs preventing a person in wheelchair from reaching his/her destination on an upper floor of a building renders that person handicapped; the presence of a working, accessible elevator removes the handicap. A print exam renders an individual with a visual impairment handicapped; an oral exam removes that barrier and hence, the handicap. Federal and state regulations, and a strong appreciation of the rights of all individuals, disabled or not, serve to eliminate or reduce handicapping situations.

Barriers: Architectural vs. Attitudinal

No environment is barrier-free. Architectural barriers can for the most part be eliminated, by providing ramps, curb cuts, handicapped parking, appropriate lighting, elevators with lowered panels, electric doors, modified and plentiful bathroom facilities, and a host of other physical changes to an environment. Most modifications, while perhaps made specifically to accommodate a person with a disability, also end up benefiting many others, so the cost is justifiable. Attitudinal barriers are much more difficult to eradicate, and can be found in all areas of academic and social life. They can show up with a condescending pat on the head to a person in a wheelchair, with the impatient completing of a sentence for a person with a speech impairment who is trying to ask or state something, with an unwillingness to take seriously a job applicant who has a disability, with the reticence of an instructor to fail a poor student just because that person has a disability or, conversely, the unwillingness to allow an appropriate accommodation that might just allow that student to earn an A. They surface when a nondisabled person uses a handicapped parking space, saying "I'll only be a minute," and an individual with a disability is therefore unable to find a slot wide enough to allow egress from his/her vehicle. The English language demonstrates an array of patronizing and demeaning attitudes, simply by its use of words like: afflicted, courageous, crippled, deaf-and-dumb, deformed, inspiring, victim, wheelchair-bound/confined to a wheelchair. Unless the term "college-bound" is a description of students who are chained to their seats in freshman composition class (nice idea, perhaps!), "wheelchair-bound" is not a description of students strapped into their wheelchairs; rather than being confined by their chairs, these students use the wheelchairs as a vehicle to give them independence and mobility, getting them out of the classroom and into the gym, discos and, yes, the library as well.

Visible vs. Invisible Disabilities

Ironically, individuals with rather obvious physical disabilities are often more easily recognized as having particular needs, and therefore meet with more success in negotiating with faculty, staff and other students. They fit the stereotype. Individuals with invisible disabilities can be handicapped by societal attitudes precisely because others expect them to be "normal" (whatever that term means). A student with a hearing loss who chooses not to wear an obvious hearing aid may be regarded as aloof or antisocial. A person with arthritis may have trouble convincing a faculty member that the pain in her fingers means she needs more time to complete her exams.

Someone with Tourette syndrome may be ostracized by his classmates because of uncontrollable tics and vocalizations. Most learning disabled students have, to the untrained eye, no outward manifestations of their disability, until they attempt to put pen to paper or take an oral exam. The moral of the story: never assume. You can ask that documentation be submitted to the PHED or PALS office (as appropriate) if you have a healthy skepticism, but recognize that different learning styles and physical needs come in widely differing packages.

Accommodation vs. Independence

Section 504 provides guidelines about certain appropriate accommodations to make a disability less of a handicap. Making an accommodation is the crucial first step, but barrier-removal alone is insufficient. It is not enough to say, "Well, we put in a ramp. The door at the top may be heavy, but another student will usually be around to open it." Or push a high elevator button. Or make a call from a too-high pay phone. Or help with a transfer into a narrow toilet. Or go inside to tell the store guard that someone in a wheelchair is waiting outside in the rain to be let into the service entrance or between the pillars that are placed to prevent shopping cart theft. In all of these situations, well-meaning businesses are only removing half of the barrier, because they are assuming that someone nondisabled will always be accompanying the individual with a disability. The person in the wheelchair is not given the choice of when to enter or exit a building, or when to study or take care of human needs, and is, instead, dependent on the charity of others. By contrast, providing the means for a person with a disability to do his/her own writing and eating and moving around campus independently without having to use a separate entrance or push a doorbell is not an issue of convenience. Rather, it is a matter of human dignity.

Fair vs. Same

Evaluations of student progress in a class take many forms. Some faculty members, especially those constrained by heavy course loads and large classes, use multiple-choice/true-false objective tests; others have more subjective and comprehensive essay examination formats. Class participation may possibly be a factor in grading, as is a level of understanding and scholarship demonstrated in term papers. While students with disabilities should never be held to lower standards than those by which their classmates are judged, they may on occasion need different avenues to show what they have learned. As an obvious example, a legally blind student asked to take a written exam without the aid of special equipment, a reader, extended time, enlarged print, or other appropriate accommodation may fail that test, not showing a lack of understanding of the material, but merely proving that (s)he has a visual impairment. A student with a communication disorder should never be discouraged from asking questions in class, but, depending upon the nature and intelligibility of his/her speech, perhaps should have the class participation grade reflect only the quality of the questions, not the frequency. In both of these situations, provision of a substitute testing form or alternate ways of demonstrating daily classroom comprehension and vitality are appropriate. If the instructor keeps in mind that the goal of student evaluation is to give the student an opportunity to demonstrate what (s)he knows, then being fair to all students does not necessarily mean treating all students exactly the same.

Defending Your Rights

Disability Rights:
Manual Of Style For Depicting People With Disabilities

This brochure is one response to a need identified by people with disabilities. The way we portray people with disabilities and our attitudes toward them are critical to their future...and to ours.

Disability vs. Handicap

A disability is a condition caused by accident, trauma, genetics or disease which may limit a person's mobility, hearing, vision, speech or mental function. Some people have one or more disabilities.

A handicap is a physical or attitudinal constraint imposed upon a person, regardless of whether that person has a disability. Webster's Ninth New Collegiate Dictionary defines the handicap as "to put at a disadvantage."

People with disabilities prefer to be called just that: people with disabilities. They are not conditions or diseases. For example, an individual is not "an epileptic," but rather "a person with epilepsy."

When writing a story or advertisement, the writer should use the term "people with disabilities" exclusively or, at a minimum, as the initial reference. Subsequent references can us terms like "person with a disability" or "individuals with disabilities."

In certain circumstances, the terms "persons with disabilities" or "individuals with disabilities" may, for grammatical or narrative reasons, be more appropriate than "people with disabilities." Generally, however, "people with disabilities" is the preferred initial reference.

Written Communications

Copywriters should portray people with disabilities as they would anyone else - with all human strengths and weaknesses. In all advertising, writers should depict people with disabilities in an appropriate manner and non-judgmental manner. Never refer to people with disabilities as "disabled" simply to fill space or to accommodate design layouts.

Interviewing Techniques

When talking with a person with a disability, speak directly to that person rather than through a companion or interpreter. Conduct interviews in a manner that emphasizes abilities, achievements and individual qualities.

Address people who have disabilities by their first names only when calling everyone present by their first name.

If you offer assistance, wait until the offer is accepted before acting. Then listen to or ask for instructions.

Disability: related terms and their meanings

Blind/Visual Impairment. Blind refers to a total loss of vision. Visual impairment indicates partial vision, also referred to as partial sight.

Cerebral Palsy. A group of conditions resulting from damage to the central nervous system. Do not assume that a person with cerebral palsy also has mental retardation; the two do not necessarily or typically occur together.

Congenital Disability. A physical impairment existing since birth.

Deaf/Hard of Hearing. Deaf refers to a total loss of hearing. Hard of hearing refers to partial hearing loss ranging from slight to severe.

Developmental Disability. Any mental or physical disability manifested by the age of 22 that may continue indefinitely and result in substantial limitation in three or more of the following: self-care, receptive and expressive language, learning, mobility, self-direction, independent living or economic sufficiency.

Epilepsy. Term for various disorders marked by electrical disturbances of the central nervous system and typically manifested by seizures, which are involuntary muscular contractions.

Learning Disability. Condition affecting the understanding or use of spoken or written language.

Mental Illness/Mental Impairment. A psychiatric disability caused by numerous factors including a biological, physiological or psychological disorder or a chemical disorder of the brain.

Mental Retardation. Condition causing significantly below-average intellectual functioning.

Paraplegia/Hemiplegia/Quadriplegia. Paraplegia: paralysis of lower half of body. Involves partial or total loss of function of both legs. Hemiplegia: full or partial paralysis of one side of body caused by brain damage due to disease, trauma or stroke. Quadriplegia: paralysis of body involving partial or total loss of function in both arms and legs.

Service Animals. Any guide dog, signal dog or other animal individually trained to provide assistance to a person with a disability.

Speech Impairment. Limited or difficult-to-understand speech patterns.

100 chicago lighthouse

CHILDREN'S PROGRAMS
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INDEPENDENT LIVING
LOW VISION REHABILITATION SERVICE
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Speaking & Writing About Individuals Who are Blind

"What should I say?"
"How do I not offend them?"

These are just some of the questions that may run through your head when you approach people who are disabled. You feel apprehensive because you don't want to say something that will offend them, especially in this politically correct world.

Here are few tips and language changes that can assist you the next time you meet someone who is disabled:

- Handicap vs. Disabled
  Handicap is defined as a barrier caused by society or the environment.

  Disabled is defined as an impairment in physical functioning.

The correct word to use is disabled when describing someone who is impaired in some physical function. The word "disabled" comes after the individual. Don't say or write the blind man or the disabled people. It should be written as the man who is blind or the people who are disabled.

- Patronizing Language

  Eliminate the following from your vocabulary when writing and speaking about people with disabilities:

1. Physically challenged
2. Special
3. Differently-abled

- People who are not disabled should not be called "normal" but people who are non-disabled.
- Use the following alternatives for outdates expressions.

Objectionable	Preferred
Afflicted	Has
Blind person	Person who is blind
Cerebral palsied has	Cerebral Palsy
Confined to a wheelchair	Uses a wheelchair
Deaf	Hard of Hearing
Emotionally disturbed	Behavior disorder
Epileptic	Has epilepsy
Handicapped	Disabled
Handicapped accessible	Accessible to people with disabilities
Insane	Mentally Impaired
Lame Uses crutches;	Walks with a limp
Midget, Dwarf	Short-statured
Mongoloid	Downs Syndrome
Normal	Non-disabled
Paralytic	Paralyzed
Retarded	Developmentally delayed
Wheelchair bound	Uses a wheelchair
Victim of	Has

By making these subtle changes in your language when speaking or writing about people with disabilities, you can stop stereotypes and misconceptions of people who are blind, visually impaired, developmentally delayed, and etc.

CHANGE TEXT SIZE AND COLOR

KEY: ~~stricken~~ = removed, old language. underscored = added, new language.

NOTE: If you cannot see a difference in the key above, you can change the display of stricken and underscorec text.

S.F. No. 525, 2nd Engrossment - 84th Legislative Session (2005-2006) Posted on Mar 10, 2005

A bill for an act

relating to state government; changing terminology for mentally retarded, mental retardation, physically handicapped, and similar terms.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MINNESOTA:

Section 1. [REVISOR INSTRUCTION.]

(a) The revisor of statutes shall change the terms in column A to the terms in column B, wherever they appear in Minnesota Statutes,

Column A	Column B
"mental retardation"	"developmental disability"
"mental retardation or a related condition"; "mental retardation and related condition"	"developmental disability"
"mentally retarded"	"developmentally disabled"
"handicapped persons"	"disabled persons"
"handicapped children"	"disabled children" or "children with disabilities," whichever term is most appropriate in the context of the sentence
"handicapped dependents"	"disabled dependents"
"handicapped"	"disabled," "disability," or "people with disabilities," whichever term is most appropriate in the context of the sentence
"handicaps"	"disabilities"
"idiots"	"developmentally disabled"

(b) Where the terms in column B are substituted in statute, insert "person" or "people" if not already used in the existing sentence structure.

Sec. 2. [MINNESOTA RULES.]

The Governor's Council on Developmental Disabilities, in consultation with the Department of Administration and the Department of Human Services, shall review Minnesota Rules and provide to the revisor of statutes a list of Minnesota Rules containing outdated language specified in section 1 and the appropriate terminology changes that must be made in each of the rules. The revisor of statutes shall make the indicated changes in Minnesota Rules.

Sec. 3. [STATE AGENCIES.]

State agencies shall use the terminology changes specified in section 1 when printed material and signage are replaced and new printed material and signage are obtained. State agencies do not have to replace existing printed material and signage to

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ARE
POOR
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COPIES

ACCESS ALASKA

Representative Peggy Wilson
State Capitol, Room 108
Juneau, AK 99801-1182

January 23, 2006

Dear Representative Wilson,

I am writing you in strong support of HB357. As you know, the language we use says a lot about the value we place on people and things. As times change, so must language. As a person with a disability, and having worked in disability services in Alaska for over 20 years, I have seen Alaska take great strides ensure people with disabilities have access to homes and jobs in their communities. We are a progressive state in that area, and so it makes sense that the language in our laws reflects that. Some of the old statutes use language to refer to people with disabilities that is offensive and unacceptable in any use. Access Alaska and the thousands of Alaskans with disabilities, whom we have the privilege to serve each year, applaud and support your efforts, and appreciate its significance.

Sincerely,

Jim Beck
Executive Director
Access Alaska, Inc.

Cc: Gale Sinnott, Director, Division of Vocational Rehabilitation

Anchorage
121 W. Fireweed, Suite 105
Anchorage, Alaska 99503
907-248-4777
Fax 907-248-0539
Toll free 800-770-4488
TTY 907-248-8799

Fairbanks
3550 Airport Way, Suite 1
Fairbanks, Alaska 99709
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Toll free 800-770-7940
TTY 907-474-8619

Mat Su
897 Commercial Drive
Wasilla, Alaska 99654
907-357-2588
Fax 907-357-5585
Toll free 800-770-0228

Opening Doors to Independence
www.accessalaska.org
info@accessalaska.org

SOUTHEAST ALASKA INDEPENDENT LIVING, INC

3225 HOSPITAL DRIVE SUITE 300 • JUNEAU, ALASKA 99801
907-586-4920 VOICE/TDD • FAX 907-586-4980 • ALASKA 800-478-7245

January 23, 2006

Re: HB 357

Dear Representatives,

During this legislative session, you have the opportunity to endorse a bill updating the language describing disability in the statutes of Alaska. We at Southeast Alaska Independent Living (SAIL) fully support this legislation sponsored by Wrangell Representative Peggy Wilson in hope that it will bring about discussion and positive viewpoints of disability.

We strongly urge the removal of the word "handicap" from the legal vocabulary, noting it as a slur and reference to begging for food (cap in hand) as our people had to do less than 100 years ago. Other terms such as "mental disabilities" and "emotionally disturbed" can be described differently and positively as "cognitive disabilities" and "emotional disabilities."

American culture consistently redefines itself through language and sub-cultures often use language to redefine themselves. Negroes became blacks then African-Americans. Homosexuals chose the term "gay" for themselves. People with disabilities have done the same during the years, attempting to fight stereotypes and negative imagery.

Through all the changes, person-first language has become the most effective and descriptive of all choices. As the House Bill 357 passes from committee to committee, please keep in mind that we are all people first. Some people have red hair, some blue eyes; some are persons with developmental disabilities and some are persons who experience low vision. Yet underneath it all, we are simply human beings. It is in this vein we urge your support of House Bill 357.

Thank you for your time and commitment to all citizens of the great State of Alaska, those without disabilities and those with disabilities.

Sincerely,

Joan O'Keefe
Executive Director

ALASKA STATEWIDE INDEPENDENT LIVING COUNCIL, INC.

1057 W. Fireweed Lane, Ste. 206
Anchorage, AK 99503

Toll Free 1 888 294 7452
Phone 907 263-2092,
2011
Fax 907 263-2012

January 24, 2006

Representative Peggy Wilson
Alaska State Legislature
State Capitol
Juneau, AK 99801

FAX: 907-465-3175

Dear Representative Wilson:

The Alaska Statewide Independent Living Council (SILC) enthusiastically supports HB 357, changing the word "handicapped" in state statute to "persons with disabilities". The SILC supports "people first" language such as is proposed in this bill. As you are aware, the term "handicap" or "handicapped" is derogatory. We certainly appreciate your effort to remove it from the official lexicon of state government. Please let us know if there is anything else we can do to support your legislation.

Sincerely,

Patrick Reinhart
Executive Director

Independent
Living Center

P.O. Box 2474
Homer, Alaska 99603
(907) 235-7911 (TT/V)
(907) 235-6236 (FAX)

Joyanna Geisler
Director

Representative Peggy Wilson
State Capitol, Room 108
Juneau, AK 99801-1182

January 23, 2006

Honorable Representative Wilson:

I am writing in support of House Bill 357, "An Act Updating the Terminology in Statutes for Persons with Disabilities; and providing for an Effective Date".

The terms that are used to reference groups of people are always weighted with the stereotypes those terms bring to mind. Whether consciously or not those stereotypes affect the way members of groups are viewed by others.

It is time for the Great State of Alaska to place people first in statutes that reference disability. By removing the stereotypical terms handicapped and handicap, we acknowledge that people with disabilities are first of all people.

Sincerely, Jim Brady

Jim Brady

Independent Living Center, Homer, Alaska.
CC. Gale Sinnott

www.alphaonenow.org

alpha One

Powering Independent Living

DISABILITY FACTS

Disability is fundamental in the human experience. People can become disabled at any point in their lives. Disability may be present from birth, or result from an accident, a work-related injury, a disease or medical condition, or the natural aging process.

more about Disability Facts

GLOSSARY OF TERMINOLOGY

Since the 1960s, people with disabilities in the US have created a civil rights movement to change the country and break down the barriers to their living independently in the community. The physical barriers are coming down but significant attitudinal barriers persist. The way we speak and the words that we use to describe people who have disabilities is a critical element in eliminating prejudice, fear, insensitivity, stereotyping and discrimination.

This glossary serves as a guideline for terminology that best portrays people with disabilities.

- Access and Accessibility
- Assistive Services
- Disability
- Disabled vs Handicapped
- Handicapped Parking/Seating
- Independent Living
- Normal
- Person with a Disability
- Victim of...Suffers from...
- Wheelchair-bound

Access and Accessibility refer to physical structures, products and equipment, communication systems, services, organizations and other social networks. When something is accessible, it is open or available to all. For example, a building that is accessible may have wide doors with easy-to-operate levers. It may have ramps, non slip floors and good lighting. An accessible film has closed captioning or video description. An accessible school play may offer a sign language interpreter.

Assistive Services assistance with daily living activities such as getting in and out of bed, bathing, dressing and cooking which make it possible for people with disabilities to live independently.

Disability a condition that interferes with a person's ability to do something independently.

Disabled vs Handicapped not synonyms. A disabling condition may or may not be handicapping. This person is handicapped when faced with a set of stairs where there is no ramp available. The word handicapped says The Associated Press Stylebook, "should be avoided in describing a disability".

Handicapped Parking, Handicapped Seating is incorrect wording, if what is meant is parking for people with disabilities, or seating for patrons who use wheelchairs.

Independent Living services focusing on goals including self determination, de-institutionalization and universal access to all opportunities in the community.

Normal is what most people, including people with disabilities, consider themselves.

Person with a Disability is a more accurate term than "disabled person" because it does not suggest that the person is defined or labeled by the disability. The emphasis is on the "person" first and foremost.

Victim of...Suffers from...inaccurate and inappropriate to describe a person with a disability. These terms should not be used.

Wheelchair-bound should not be used since a person may use a wheelchair only occasionally. Using the wheelchair for independent mobility is liberating for people with disabilities -providing them with mobility and freedom rather than restricting or "binding" them.

DON'T SAY... > SAY...

Able bodied > nondisabled
Aids Victim > person with Aids
Brain damaged > person with brain injury

For more information about guidelines for reporting & writing about people with disabilities contact **marketing@alphaonenow.com**

more about Don't Say... > Say...

MILESTONES

Disability is a significant aspect of our lives and communities. Given the numbers of people with disabilities in the population, it is one of the most significant public health issues. Throughout the second half of the twentieth century, awareness around disability issues has been rapidly growing.

ABOUT THIS WEB SITE

Alpha One's website has been built to give people up to date and accurate information about issues of concern to people with disabilities. We believe that information empowers and that access to this vital information is essential to living independently.

Our goal is to employ the latest technology to provide understandable information easily accessible to everyone. Your ideas and input can help keep this site up to date and useful. Let us know what you think - we welcome your ideas.

Contact the Editorial Staff **webmaster@alphaonenow.com**

View Our **internet Policy**

GUIDE TO DISABLILITY ORGANIZATIONS

There have been many responses to the needs of people with disabilities from governments at all levels, as well as from private sources including faith-based institutions, educational institutions, and the broader independent sector. Given the size of the population of people with disabilities, it is not surprising that the private sector has developed and offers for sale many useful

Human Resources Development Canada

Canada

A WAY WITH WORDS

Guidelines and Appropriate Terminology For the Portrayal of Persons With Disabilities

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Produced By:
Status of Disabled Persons Secretariat
Department of the Secretary of State of Canada
Ottawa, Ontario K1A 0M5
(819) 997-2412 (VOICE and TDD)

Terminology Guide Concerning Persons With Disabilities

Language is a powerful and important tool in shaping ideas, perceptions, and ultimately, public attitudes.

Words are a minor of society's attitudes and perceptions. Attitudes can be most difficult barrier persons with disabilities must face in gaining full integration, acceptance and participation in society.

Careful presentation of information about persons with disabilities can help overcome negative attitudes and shape positive ones. The standing Committee on the Status of Disabled Persons found in its report No News is Bad News that vocabulary can create perception. Demeaning, belittling or negative words are a barrier to greater understanding and can trivialize genuine support given by a community to persons with disabilities.

Language use is changing as persons with disabilities claim their individual and collective right to participate fully in society.

Dated and disparaging words are being replaced with precise, descriptive terms which have specific meanings that are not interchangeable.

Persons with disabilities are asking, just as women and minority groups are asking, that the media use respectful terms in writing about them or issues that affect their lives.

Individuals with disabilities are working to achieve equality, independence and full participation in our society. The ways in which issues are reported and the use of proper terminology can help persons with disabilities reach the goals.

This booklet suggests current and appropriate terminology to reflect the increased participation by Canadians with disabilities in our society.

This booklet is intended to encourage and promote fair and accurate portrayal of persons with disabilities. It is primarily designed for print and broadcast media professionals writing and reporting about issues of concern to persons with disabilities.

This booklet has two sections and a removable insert. GENERAL GUIDELINES has information on terminology and portrayal of persons with disabilities.

MEDIA COVERAGE OF PERSONS WITH DISABILITIES deals with reporting on issues of concern to persons with disabilities. The removable insert suggests appropriate terminology.

1. It is important to remember that each word in today's terminology has a precise meaning and that the words are not interchangeable.
2. "Disabled" and "handicapped" are not the same thing. A disability is a functional limitation or restriction of an individual's ability to perform an activity. A "handicap" is an environmental or attitudinal barrier that limits the opportunity for a person o participate fully. Negative attitudes or inaccessible entrances to buildings are examples of handicaps.
3. The word "disables" is an adjective, not a noun. People are not conditions. Do not use "the disabled; use"persons with disabilities".
4. Focus on the issue rather than the disability. If the disability is not relevant to the story, it is not necessary to report it.
5. Try to avoid categorizing persons with disabilities as either super-achievers or tragic figures. Choose words that are non-judgemental, non-emotional and are accurate descriptions. Avoid using "brave", "courageous", "inspirational" or other similar words that are routinely used to describe a person with a disability.
   Remember that the majority of persons with disabilities are average and typical of the rest of the population.
   Similarly, references which cause discomfort, guilt, pity, or insult, should be avoided. Words like "suffers from", stricken with", "afflicted by", "patient", "disease", or "sick" suggest constant pain and a sense of hopelessness. While this may be the case for some individuals, a disability is a condition that does not necessarily cause pain or require medical attention.
6. Avoid the use of words such as "burden", "incompetent", "defective", "special", etc. which suggest that persons with disabilities should be treated differently or be excluded from activities generally available in the community.
7. Be particularly careful with terminology used in headlines. Remember that headlines make the first impression.
8. Refer to technical aids in factual, non-emotional terms. Avoid prolonged focus on support equipment.
9. Persons with disabilities are comfortable with the terminology used to describe daily living activities. Persons who use wheelchairs go for "walks", people with visual impairments "see" what you mean, etc. A disability may just mean that some things are done n a different manner; however, that does not mean the words used to describe the activity must be different.
10. Remember that although some disabilities are not visible, it does not mean they are less real. Individuals with invisible disabilities such as epilepsy, hemophilia, mental health,learning,

or developmental disabilities also encounter negative attitudes and barriers.

Researching, Writing and Reporting

1. Too often, when a person with a disability is featured in a story that has several possible angles, the human interest story line dominates, e.g. how the individual has overcome great goals.
2. There are few examples of in-depth coverage of issues of particular importance to persons with disabilities (e.g., lack of physical access to facilities, employment, poverty, etc.).
3. Persons with disabilities are seldom asked for their views on stories dealing with transportation, the environment, child care, etc.

The media can help create and reinforce positive attitudes towards persons with disabilities. Progress had been made in recent years and media professionals are asking advice on how to report on, discuss, and write about disability.

Bridging the Communications Gap

Here are some suggestions to improve communications with persons with disabilities.

1. When talking with a person with a disability speak directly to him/her rather than through a companion who may be there.
2. Avoid putting persons with disabilities on a pedestal and using patronizing terms. Interview a person with a disability as you would any other person.
3. Do not unnecessarily emphasize differences. having a "one of them" versus a "one of us" attitude only serves to reinforce barriers.
4. In visual treatments (e.g., television, photographs), do not dwell on technical aids or adaptive devices unless, of course, the purpose is to introduce or discuss a particular aid or device.

Following an interview, ask yourself:

1. Am I writing this piece because it involves a person with a disability or because the issue and related circumstances are relevant to the general population? If it did not involve a person with a disability, would I still want to write it?
2. Is a reference to a disability necessary to the story? If it is, am I using the correct terminology (e.g., "uses a wheelchair", and not "confined to a wheelchair")?
3. Is this piece accurate and unbiased? Have I avoided sensationalism?

Journalists can contribute to a more positive and accurate image of persons with disabilities. The information provided to the general public,

and the ways in which this information is presented, often create a framework for the attitudes people have and the ways in which they interact with individuals with disabilities. If the coverage of disability-related issues is done in a non-emotional, factual and integrative manner, the public will no doubt begin to question the prejudices and stereotypes that still exist.

- *Editing Canadian English*. Prepared for the Freelance Editors Association of Canada
- *Guidelines for Reporting and Writing About People with Disabilities.* Archalert, Volume 4, No, 7.
- *No News is Bad News*. Standing Committee on the Status of Disables Persons, House of Commons.
- *Portraying People with Disabilities*. National Easter Seal Society (Chicago, Illinois).
- *"Watch Your Language. Words Shape Attitudes"*. Francis Strong (appeared in the Rehabilitation Digest, winter, 1989).
- *Word Choices. A lexicon of preferred terms for disability issues.* Office for Disabled Persons, Government of Ontario.
- *Words of Dignity*. Ontario March of Dimes.
- *Worthless or Wonderful: The Social Stereotyping of Persons with Disabilities*. Status of Disabled Persons Secretariat, Department of the Secretary of State of Canada.

Canadian Association for Community Living (CACL)
4700 Keele Street, Kinsmen Building
Toronto, Ontario
M3J 1P3
(416) 661-9611

Canadian Association of the Deaf (CAD)
2435 Holly Lane Suite 205
Ottawa, Ontario
K1V 7P2
(613)526-4785

Canadian Council of the Blind (CCB)
396 Cooper Street
Ottawa. Ontario
K2P 2H7
(613) 567-0311

Canadian Hard of Hearing Association (CHHA)
2435 Holly Lane Suite 205
Ottawa, Ontario
K1V 7P2
VOICE (613) 526-1584
TDD (613)526-2692

Canadian Mental Health Association (CMHA)
2160 Yonge Street
Toronto, Ontario
M4S 2Z3
(416) 484-7750

Canadian National Institute for the Blind (CNIB)
1931 Bayview Avenue
Toronto, Ontario
M4G 3V9

Canadian Paraplegic Association (CPA)
520 Sutherland Drive
Toronto, Ontario
M4G 3V9

ALASKA MENTAL HEALTH BOARD

FEB 23 2006

Advisory Board on Alcoholism and Drug Abuse

Alaska Mental Health Board
Advisory Board on Alcoholism and Drug Abuse

Joint Advocacy Plan Mission and Goals

The Alaska Mental Health Board (AMHB) and the Advisory Board on Alcoholism and Drug Abuse (ABADA) are the state agencies charged with planning and coordinating behavioral health services funded by the State of Alaska. The joint mission of AMHB and ABADA is to advocate for programs and services that promote healthy, independent, productive Alaskans.

Advocacy Goals:

- Alaskans will have access to a broad range of comprehensive, integrated mental health and substance abuse services aimed at prevention, diagnosis, treatment and rehabilitation.

- The State of Alaska will provide quality, recovery-focused services based on best practices, informed by comprehensive program evaluation and in step with personal, cultural and community needs.

- The State of Alaska will pass laws and promulgate regulations that protect the rights and dignity of citizens while promoting respectful service provision.

- Adequate, equitable and consistently funded support programs that meet the basic needs of beneficiaries as they transition to independence will be available in Alaska.

- Alaska will have an educated citizenry that recognizes drug addiction and mental illness as diseases that are preventable and treatable.

- Partnerships between communities, public and private organizations, families and individuals will advance education, prevention, recovery, and the well-being of current and future generations.

SB 210 – Alcohol: Transport, Manufacture; Forfeiture (Therriault) Currently in (S) Finance.
In local option communities, this bill reduces the quantity of distilled spirits an individual may possess that gives rise to the presumption of intent to sell, and makes barter of alcohol equivalent to a sale. The bill also gives law enforcement access to a civil process to seize and dispose of goods and property used to manufacture, transport or sell liquor illegally or goods and property purchased with proceeds from this illegal activity.

- This measure was recommended by the federally-appointed *Alaska Rural Justice and Law Enforcement Commission* charged with investigating various aspects of rural justice services.
- The significantly shorter civil forfeiture process (60 days compared to the criminal process of 6 months to a year) provides a further disincentive to bootlegging.

Companion: **HB 373 – Alcohol: Transport, Manufacture; Forfeiture (Meyer)** Currently in (H) Rules.

SB 207 – Eligibility for Denali Kid Care (Elton). No hearing scheduled
This bill restores DKC eligibility to 200% of the poverty level and removes the fixed dollar amount so that eligibility can keep up with inflation.

- The DKC program serves children and pregnant women, for whom consistent medical care is crucial to healthy growth and positive birth outcomes.
- Program eligibility cuts made in 2003 caused more than 2200 children and 200 pregnant women to lose health coverage, saving the state aabout $500,000.
- The cost to Alaska's health care system was far greater, as the state also loses the DCK federal matching funds of approximately $3 to every $1 of state funding.

CSHB 312 – Fetal Alcohol Syndrome Prevention (Weyhrauch).
This bill requires that DHSS to develop an FAS informational campaign and distribute information to schools and hospitals. It also requires that licensing boards for doctors, physician assistants and nurse practitioners develop standards for FASD education and require FASD training as a condition of licensure. In addition, FASD would be added as a condition reported to the current Birth Defects Registry.

- This bill builds on eight years of work done in the State of Alaska to address the epidemic of FASD.
- These measures will promote prevention of FASD through requirements for education of health care professionals.

CSHB 357 – Statutory References to Disabilities (Wilson).
This bill was heard and passed out of (H) Finance. It updates the statutes by modifying the terminology used to describe people with disabilities "in recognition of the ability of individuals to the society and to the state." The CS makes additional terminology changes. The bill is now in (H) Rules.

- These changes bring the language of the Alaska statutes into conformity with widely accepted terms.
- Language is powerful and the proposed revisions strengthen the state's commitment to dignity for people with disabilities.

SENATE COMMITTEE REPORT

DATE: 2/23/06

FURTHER: (Finance)

DATE TURNED
IN TO OFFICE: 2.27.06

Health, Education and Social Services Committee considered CS FOR HOUSE BILL NO. 357(FIN)

HB 357 STATUTORY REFERENCES TO DISABILITIES

"An Act updating the terminology in statutes for persons with disabilities; and providing for an effective date."

and recommends:

[ ] be **replaced** with _____ **CS** _____ (_____)

[ ] adopt **previous** _____ **CS** _____ (_____)

[ ] attached amendment(s)

[X] adopt House Letter of Intent by _____ Committee

[ ] further referral to _____ Committee

CS Senate Bill:
[ ] Same Title
[ ] New Title

SCS House Bill:
[ ] Same Title
[ ] Technical Title Change
[ ] New Title w/ SCR #_____

NEW FISCAL NOTE(S):

Department	Date	Fiscal	Indet.	Zero	FN#

PREVIOUS FISCAL NOTE(S):

Department	Date	Fiscal	Indet.	Zero	FN#
HSS	1/20			X	1
LWF	1/17			X	2

[ ] APPROPRIATION - no fiscal note

	SIGNATURES AND RECOMMENDATIONS:	DO PASS	DO NOT PASS	NO REC	AMEND
Elton				✓	
Wilken		✓			
Olson				✓	
Dyson	CHAIR:	✓			

HB 360

4/10 amended line 20

24-LS1468\A.5
Bullock
4/7/06

AMENDMENT

OFFERED IN THE HOUSE

TO: HB 360

Page 1, line 1, following "systems":

Insert "; **and relating to the regulation of an exposed aquifer that is a drinking water source**"

Page 1, following line 15:

Insert a new bill section to read:

"* **Sec. 2.** AS 46.03 is amended by adding a new section to read:

Sec. 46.03.085. Exposed aquifers. (a) The department shall adopt regulations providing for water quality standards and the protection of an exposed aquifer. The regulations must include a procedure for the review of a proposed development on property containing an exposed aquifer and for monitoring the water quality of the exposed aquifer until the aquifer is no longer exposed and set a fee to accompany the filing of the proposed development plan to cover the cost of the review.

(b) A person developing property containing an exposed aquifer shall prepare and file a development plan with the department providing for the protection of the exposed aquifer, shall pay the required fee, and may not proceed with the development before receiving approval of the development plan by the department.

(c) In this section,

(1) "exposed aquifer" means an aquifer that is exposed to the surface as a result of previous mining activity and [is used as] a source of drinking water;

(2) "proposed development" means a development project or subdivision for which the construction of improvements has not started within 100 feet of an exposed aquifer."

Renumber the following bill section accordingly.

FISCAL NOTE

STATE OF ALASKA
2006 LEGISLATIVE SESSION

Fiscal Note Number:
Bill Version: HB 360
() Publish Date:

Revision Date/Time (Note if correction):
Dept. Affected: Dept of Environmental Conservation

Title: Regulation of public accomodations water supply systems
RDU: Environmental Health
Component: Drinking Water
Sponsor: Representative Kevin Meyer
Requester: House Finance Committee
Component No.: 2066

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

OPERATING EXPENDITURES	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
Personal Services	288.1	288.1	288.1	288.1	288 1	288.1
Travel	15.0	15.0	15.0	15.0	15.0	15.0
Contractual	86.6	36.6	36.6	36.6	36.6	36.6
Supplies	33.6	5.0	5.0	5.0	5.0	5.0
Equipment	0.0	0.0	0.0	0.0	0.0	0.0
Land & Structures	0.0	0.0	0.0	0.0	0.0	0.0
Grants & Claims	0.0	0.0	0.0	0.0	0.0	0.0
Miscellaneous	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL OPERATING	**423.3**	**344.7**	**344.7**	**344.7**	**344.7**	**344.7**
CAPITAL EXPENDITURES						
CHANGE IN REVENUES ( )	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts	0.0	0.0	0.0	0.0	0.0	0.0
1003 GF Match	0.0	0.0	0.0	0.0	0.0	0.0
1004 GF	373.3	294.7	294.7	294.7	294.7	294.7
1005 GF/Program Receipts	0.0	0.0	0.0	0.0	0.0	0.0
1037 GF/Mental Health	0.0	0.0	0.0	0.0	0.0	0.0
Other (1007 Interagency)	50.0	50.0	50.0	50.0	50.0	50.0
TOTAL	**423.3**	**344.7**	**344.7**	**344.7**	**344.7**	**344.7**

Estimate of any current year (FY2006) cost: 0.0
Mark this box (X) if funding for this bill is included in the Governor's FY 2007 budget proposal:

POSITIONS

Full-time	4	4	4	4	4	4
Part-time	0	0	0	0	0	0
Temporary	0	0	0	0	0	0

ANALYSIS: *(Attach a separate page if necessary)*

This legislation would require the DEC Drinking Water program to regulate public accommodations drinking water systems that serve 24 people or less for at least 60 days of the year. It excludes private homes and duplexes. The water systems that would qualify are not federally regulated and are classified by the state as "Class C" public water systems. The legislature, through the FY04 and FY05 budget process, directed the department to eliminate services to Class C public water systems. This legislation would restore DEC's responsibility for a portion of the Class C systems in the state. There is no definitive inventory for the total number of systems that would be regulated under this legislation. However, based on available information, there are an estimated 3,000 systems that would be regulated.

(Continued on page 2)

Prepared by: Kristin Ryan, Director — Phone (907) 269-7644
Division: Environmental Health — Date/Time 4/10/06 8:00 AM
Approved by: Kurt Fredriksson — Date 4/10/06 8:00 AM
Agency: Department of Environmental Conservation

ANALYSIS CONTINUATION

(Continued from page 1)

Regulations will be promulgated that will require Class C systems to conduct annual tests for fecal coliform bacteria and nitrates with results sent to DEC. If the system has a surface water source, filtration and/or disinfection will be required. The legislation includes the option for DEC to require systems to submit plans to DEC for review and approval for construction, extensions, installations and operation. Existing statute allows DEC to waive this requirement and this fiscal note assumes DEC will employ this waiver for Class C systems.

- Personal Services - Funding 4 permanent full time positions is needed to develop regulations, implement the regulations, perform compliance monitoring, provide technical assistance, and conduct enforcement.

- Travel - Support travel for inspections and complaint investigations.

- Contractual - RSA to Dept. of Law for legal assistance with regulations development, professional services contracts to develop registration and compliance monitoring database, public notices, and position support costs in the first year. Contractual funding is also needed for position support costs.

- Supplies - Additional supplies are needed in the first year of start up and one time costs for office furniture and computers for all new permanent staff thereafter for ongoing office supplies, field equipment (such as personal safety gear, field equipment, cameras), and computer replacement costs.

- Other Fund Source - Interagency authority is included for an RSA with DHSS. A small subset of Class C systems; facilities that provide child care and/or assisted living, are currently provided limited services by DEC through an RSA from DHSS that began in FY2006 as an unbudgeted RSA. This RSA funding is expected to continue and is therefore included in this fiscal note.

Personal Services New Position Detail

Department of Environmental Conservation
HB 360 (revised)

Scenario: DEC 07 Fiscal Notes (5168)
Component: Drinking Water (2066)
RDU: Environmental Health (207)

PCN	Job Class Title	Time Status	Retire Code	Barg Unit	Location	Salary Sched	Range & Steps	Budgeted Months	Split / Count	Annual Salary	COLA	Premium Pay	Annual Benefits	Total Costs
18-#001	Environ Program Spec IV	FT	A	GG	Anchorage	2A	20 B	12.0		55,056	1,489	0	29,802	86,347
Justification: Implement HB360. Compliance monitoring, technical assistance, and enforcement for Class C public water systems.														
Funding Detail: 1004 General Fund Receipts													100.00%	86,347
											Total Funding:		100.00%	86,347
18-#002	Environ Program Spec II	FT	A	GG	Anchorage	2A	16 B	12.0		41,748	1,129	0	25,111	67,988
Justification: Implement HB360. Compliance monitoring, technical assistance, and enforcement for Class C public water systems.														
Funding Detail: 1004 General Fund Receipts													100.00%	67,988
											Total Funding:		100.00%	67,988
18-#003	Engineering Assistant II	FT	A	GG	Anchorage	2A	18 B	12.0		48,024	1,299	0	27,323	76,646
Justification: Implement HB360. Plan reviews, technical assistance, and enforcement for Class C public water systems.														
Funding Detail: 1004 General Fund Receipts													100.00%	76,646
											Total Funding:		100.00%	76,646
18-#004	Environ Program Technician	FT	A	GG	Anchorage	2A	13 B	12.0		33,864	916	0	22,332	57,112
Justification: Implement HB360. Compliance monitoring, technical assistance, and enforcement for Class C public water systems.														
Funding Detail: 1004 General Fund Receipts													100.00%	57,112
											Total Funding:		100.00%	57,112

Note: If a position is split, an asterisk (*) will appear in the Split/Count column. If the split position is also counted in the component, two asterisks (**) will appear in this column.

Personal Services New Position Detail

Department of Environmental Conservation
HB 360 (revised)

Scenario: DEC 07 Fiscal Notes (5168)
Component: Drinking Water (2066)
RDU: Environmental Health (207)

Component Summary:

Total New Positions: 4

Fund Description		Fund Percent	Fund Amount
1004	General Fund Receipts	100.00%	288,093
	Total Funding:	100.00%	288,093

Note: If a position is split, an asterisk (*) will appear in the Split/Count column. If the split position is also counted in the component, two asterisks (**) will appear in this column

HB 360 Fiscal Note Detail

Regulation of Class C (public accomodation) water systems

	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012
Expenditures						
Personal Services						
New PCNs						
EPS IV	86.4	86.4	86.4	86.4	86.4	86.4
EEA II	76.6	76.6	76.6	76.6	76.6	76.6
EPS II	68.0	68.0	68.0	68.0	68.0	68.0
EPT	57.1	57.1	57.1	57.1	57.1	57.1
Total PS	288.1	288.1	288.1	288.1	288.1	288.1
Travel	15.0	15.0	15.0	15.0	15.0	15.0
Contractual						
DB/IT	30.0	0.0	0.0	0.0	0.0	0.0
DOL RSA	20.0	0.0	0.0	0.0	0.0	0.0
Position support	36.6	36.6	36.6	36.6	36.6	36.6
Sub-total	86.6	36.6	36.6	36.6	36.6	36.6
Supplies						
General Office	6.0	4.0	4.0	4.0	4.0	4.0
PC/Wk Stn	27.6	0.0	0.0	0.0	0.0	0.0
Field Supplies	0.0	1.0	1.0	1.0	1.0	1.0
Sub-total	33.6	5.0	5.0	5.0	5.0	5.0
Total Operating	423.3	344.7	344.7	344.7	344.7	344.7
Fund Sources						
1002 Fed	0.0	0.0	0.0	0.0	0.0	0.0
1003 GFM	0.0	0.0	0.0	0.0	0.0	0.0
1004 GF	373.3	294.7	294.7	294.7	294.7	294.7
1005 GF/PR	0.0	0.0	0.0	0.0	0.0	0.0
1007 IA	50.0	50.0	50.0	50.0	50.0	50.0
Total Fund Sources	423.3	344.7	344.7	344.7	344.7	344.7

REPRESENTATIVE KEVIN MEYER

HOUSE DISTRICT 30

SPONSOR STATEMENT

HB 360

"An Act relating to the regulation of public accommodation water supply systems."

House Bill 360 directs the Department of Environmental Conservation to regulate small public water systems to ensure that the public's water supply is safe and clean.

Approximately 100,000 Alaskans get their water from small public water systems. These public water systems are too small to be regulated by EPA but are bigger than a private well. Approximately 3,000 of these small public water systems serve public facilities like day care or residential care facilities and office buildings.

According to the Center for Disease Control (CDC), the number of water borne outbreaks related to water sources not covered under the National Safe Drinking Water Act has increased 50% since 1998. The increase is attributed to rapid community growth, on-site waste disposal systems and faulty well design. A national study of 5,000 small water systems showed 42% contaminated with fecal colifrom. Drinking Water can be contaminated with a variety of things that potentially are fatal including fecal coliforms, nitrates, E. Coli and Cryptosporidium.

While Alaskans may assume that the water they drink is safe and sanitary, the water used in many restaurants, day care facilities and other public places is often untested and could be contaminated. By monitoring and establishing standards for small public water systems the Department of Environmental Conservation will be able to respond to complaints from the public, ensure drinking water is safe and be prepared to respond to an emergency.

Email: Representative_Kevin_Meyer@legis.state.ak.us • **Toll Free:** (866) 465-4945
Session: State Capitol, Juneau, Alaska 99801-1182 • Phone: (907) 465-4945 Fax: (907) 465-3476
Interim: 716 W. 4th Ave., Anchorage, Alaska 99501-2133 • Phone: (907) 269-0199 Fax: (907) 269-0197

FISCAL NOTE

STATE OF ALASKA
2006 LEGISLATIVE SESSION

Fiscal Note Number: 1
Bill Version: HB 360
(H) Publish Date: 2/8/06

Revision Date/Time (Note if correction):
Dept. Affected: Dept of Environmental Conservation

Title: Regulation of public accomodations water supply systems
RDU: Environmental Health
Component: Drinking Water
Sponsor: Representative Kevin Meyer
Requester: House Resources Committee
Component No.: 2066

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

OPERATING EXPENDITURES	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
Personal Services	379.7	428.9	428.9	428.9	428.9	428.9
Travel	17.0	17.0	17.0	17.0	17.0	17.0
Contractual	95.9	45.9	45.9	45.9	45.9	45.9
Supplies	8.0	5.0	5.0	5.0	5.0	5.0
Equipment	34.5	1.0	1.0	1.0	1.0	1.0
Land & Structures	0.0	0.0	0.0	0.0	0.0	0.0
Grants & Claims	0.0	0.0	0.0	0.0	0.0	0.0
Miscellaneous	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL OPERATING	**535.1**	**497.8**	**497.8**	**497.8**	**497.8**	**497.8**
CAPITAL EXPENDITURES						
CHANGE IN REVENUES ( )	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts	0.0	0.0	0.0	0.0	0.0	0.0
1003 GF Match	0.0	0.0	0.0	0.0	0.0	0.0
1004 GF	485.1	447.8	447.8	447.8	447.8	447.8
1005 GF/Program Receipts	0.0	0.0	0.0	0.0	0.0	0.0
1037 GF/Mental Health	0.0	0.0	0.0	0.0	0.0	0.0
Other (1007 Interagency)	50.0	50.0	50.0	50.0	50.0	50.0
TOTAL	**535.1**	**497.8**	**497.8**	**497.8**	**497.8**	**497.8**

Estimate of any current year (FY2006) cost: 0.0
Mark this box (X) if funding for this bill is included in the Governor's FY 2007 budget proposal:

POSITIONS

Full-time	5	5	5	5	5	5
Part-time	0	0	0	0	0	0
Temporary	0	1	1	1	1	1

ANALYSIS: *(Attach a separate page if necessary)*

This legislation would require the DEC Drinking Water program to regulate public accommodations drinking water systems that serve 24 people or less for at least 60 days of the year. It excludes private homes and duplexes. The water systems that would qualify are not federally regulated and are classified by the state as "Class C" public water systems. The legislature, through the budget process, recently directed the department to eliminate services to Class C public water systems. This legislation would restore DEC's responsibility for a portion of the Class C systems in the state. There is no definitive inventory or data source for the total number of systems that could be regulated under this legislation but based on information from other agencies (DHSS, DEED, DEC Food Safety) on public accommodations, there is an estimated 3,000 systems that would be regulated.

(Continued on page 2)

Prepared by: Kristin Ryan, Director — Phone (907) 269-7644
Division: Environmental Health — Date/Time 2/4/06 11:00 AM
Approved by: Kurt Fredriksson — Date 2/4/2006
Agency: Department of Environmental Conservation

STATE OF ALASKA
2006 LEGISLATIVE SESSION

BILL NO. HB 360

ANALYSIS CONTINUATION

(Continued from page 1)

Regulations will be promulgated that will require Class C systems to conduct annual tests for fecal coliform bacteria and nitrates with results sent to DEC. If the system has a surface water source, filtration and/or disinfection will be required. The legisiation requires systems to submit plans to DEC for review and approval for construction, extensions, installations and operation.

- **Personal Services** - Funds are for 5 permanent FT positions and one non-permanent seasonal College Intern. The full time positions will develop regulations, implement the regulations, perform compliance monitoring, provide technical assistance, conduct plan reviews and enforcement. Funds are included in the second year and beyond for a seasonal College Intern that will be employed to assist the engineer's plan review process. This position will be used to support the program during seasonal peaks and to enhance recruitment of engineering positions for the Drinking Water program.

- **Travel** - Support travel for inspections and complaint investigations.

- **Contractual** - RSA to Dept. of Law for legal assistance with regulations development, professional services contracts to develop registration and compliance monitoring database, public notices, and position support costs in the first year. Thereafter, contractual funding is for position support costs.

- **Supplies** - Additional supplies are needed in the first year of start up and thereafter standard office supplies.

- **Equipment** - One time costs for office furniture and computers for all new permanent staff thereafter ongoing office equipment and computer replacement costs and inspection equipment costs (such as personal safety gear, field equipment, cameras).

- **Other Fund Source** - Interagency authority is included for an RSA with DHSS. A small subset of Class C systems; facilities that provide child care and/or assisted living, are currently provided limited services by DEC through an RSA from DHSS that began in FY2006 as an unbudgeted RSA. This RSA funding is expected to continue and is therefore included in this fiscal note.

Regulation of Class C (public accomodation) water systems

	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012
Expenditures						
Personal Services						
New PCNs						
EPS IV	86.4	86.4	86.4	86.4	86.4	86.4
EE I	91.6	91.6	91.6	91.6	91.6	91.6
EEA II	76.6	76.6	76.6	76.6	76.6	76.6
EPS II	68.0	68.0	68.0	68.0	68.0	68.0
EPT	57.1	57.1	57.1	57.1	57.1	57.1
College Intern IV	0.0	49.2	49.2	49.2	49.2	49.2
Total PS	379.7	428.9	428.9	428.9	428.9	428.9
Travel	17.0	17.0	17.0	17.0	17.0	17.0
Contractual						
DB/IT	30.0	0.0	0.0	0.0	0.0	0.0
DOL RSA	20.0	0.0	0.0	0.0	0.0	0.0
Position support	45.9	45.9	45.9	45.9	45.9	45.9
Sub-total	95.9	45.9	45.9	45.9	45.9	45.9
Supplies	8.0	5.0	5.0	5.0	5.0	5.0
Equipment						
PC/Wk Stn	34.5	0.0	0.0	0.0	0.0	0.0
Other	0.0	1.0	1.0	1.0	1.0	1.0
Sub-total	34.5	1.0	1.0	1.0	1.0	1.0
Total Operating	535.1	497.8	497.8	497.8	497.8	497.8
Fund Sources						
1002 Fed	0.0	0.0	0.0	0.0	0.0	0.0
1003 GFM	0.0	0.0	0.0	0.0	0.0	0.0
1004 GF	485.1	447.8	447.8	447.8	447.8	447.8
1005 GF/PR	0.0	0.0	0.0	0.0	0.0	0.0
1007 IA	50.0	50.0	50.0	50.0	50.0	50.0
Total Fund Sources	535.1	497.8	497.8	497.8	497.8	497.8

REPRESENTATIVE KEVIN MEYER

HOUSE DISTRICT 30

MEMORANDUM

DATE: January 16, 2006

TO: Representative Kevin Meyer

FROM: Mike Pawlowski

RE: Sectional Analysis for HB 360
(Version No. 24 – LS1468\A)

As a preliminary matter, note that a sectional summary of a bill should not be considered an authoritative interpretation of the bill and the bill itself is the best statement of its contents. If you would like an interpretation of the bill as it may apply to a particular set of circumstances, please advise.

Section 1. Adds a new section requiring the Department of Environmental Conservation to adopt regulations establishing minimum drinking water standards and standards for the construction, improvement, and maintenance of water supply systems serving a place of public accommodation. Defines "public accommodation" and "water supply system."

Section 2. Requires plans be submitted to the Department of Environmental Conservation prior to the construction, extension, installation or operation of a water supply system as defined in section 1.

Sectional

Email: Representative.Kevin.Meyer@legis.state.ak.us • Toll Free: (866) 465-4945
Session: State Capitol, Juneau, Alaska 99801-1182 • Phone: (907) 465-4945 Fax: (907) 465-3476
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Alaska Conservation Alliance

Uniting for Alaska's Future

March 14, 2006

The Honorable Mike Chenault
Co-Chair, House Finance Committee
House of Representatives
Alaska State Capitol, Room 519
Juneau, Alaska 99801-1182

The Honorable Kevin Meyer
Co-Chair, House Finance Committee
House of Representatives
Alaska State Capitol, Room 519
Juneau, Alaska 99801-1182

Dear Representatives Chenault and Meyer,

On behalf of the 40 conservation groups and businesses and 38,000 Alaskans represented by the Alaska Conservation Alliance (ACA), I would like to express support for HB360. ACA would like to commend Representative Meyer for taking the lead to close an important gap in the regulatory process by ensuring that small water systems are monitored and kept safe in the state of Alaska.

Over 100,000 individuals in Alaska are dependent upon water systems that are too small to be regulated by the EPA, but are larger than private wells. With the number of water-borne outbreaks increasing dramatically in the last several years, we believe the regulations put in place by HB360 are vital to safeguard public health and drinking water in small public water systems. ACA would like to emphasize the importance of including regular water testing as part of the established regulations. Though these tests will add to the need for monetary backing, as evidenced by the Department of Environmental Conservation's fiscal note, they are indispensable as a means to ensure drinking water safety.

The Alaska Conservation Alliance would like to thank you for your consideration of HB360 and would urge you to adopt this important piece of legislation.

Sincerely,

Kate Troll

Kate Troll
Executive Director

cc: The Honorable Representative Stoltze
The Honorable Representative Foster
The Honorable Representative Hawker
The Honorable Representative Holm
The Honorable Representative Kelly
The Honorable Representative Weyhrauch
The Honorable Representative Kerttula
The Honorable Representative Joule
The Honorable Representative Moses

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EPA 810-F-99-017
December 1999

Drinking Water Standards & Health Effects

SAFE DRINKING WATER ACT • CELEBRATING 25 YEARS • PROTECT OUR HEALTH FROM SOURCE TO TAP

Drinking water standards are set by the U.S. Environmental Protection Agency (USEPA) to control the level of contaminants in the nation's drinking water. The Safe Drinking Water Act (SDWA) requires USEPA to set these standards, which public water systems in the U.S. are required to meet. USEPA has set standards for 90 chemical, microbiological, radiological, and physical contaminants in drinking water. Seven of these are new standards which will be enforceable January 1, 2002. USEPA and others are currently conducting research and collecting information to determine which currently unregulated contaminants pose the greatest public health risk and will therefore be regulated in the future.

USEPA also sets Secondary Drinking Water Regulations, which are non-enforceable guidelines for contaminants that may cause cosmetic effects (such as skin and tooth discoloration) or aesthetic effects (such as taste or odor). Water systems are not required by USEPA to adopt these secondary standards, but states may choose to adopt and enforce them.

Public Water Systems Must Meet National Drinking Water Standards

Drinking water standards apply to **public water systems**, which provide water to at least 15 connections or 25 persons at least 60 days out of the year (most cities and towns, schools, businesses, campgrounds, and shopping malls are served by public water systems).

Private Wells

The 10 percent of Americans whose water comes from private wells (individual wells serving fewer than 25 persons) are not required to be protected by these federal standards. People with private wells are responsible for making sure that their own drinking water is safe. Some states do set standards for private wells, so well owners should check their state requirements. USEPA recommends testing your water once per year to see if it meets federal and state standards. Call the Safe Drinking Water Hotline at **1-800-426-4791** or see the Safewater home page at www.epa.gov/safewater/faq/sco.html to find out how to get a list of certified testing labs in your state.

Bottled Water

Bottled water is regulated by the U.S. Food and Drug Administration as a food product, and is required to meet standards equivalent to those USEPA sets for tap water. For information on bottled water regulations, call the FDA at 1-800-463-6332.

Steps in Drinking Water Standard Setting:

USEPA uses the following steps to set enforceable, health-based drinking water standards.

1. **Determine whether a contaminant should be regulated based on peer-reviewed science,** including data on how often the contaminant occurs in the environment; how humans are exposed to it; the health effects of exposure, (particularly to vulnerable subpopulations); how easily the contaminant can be detected in drinking water; whether technology exists to remove it from drinking water; and the likely impact of regulation on water systems, public health, and the economy.

2. Set a **Maximum Contaminant Level Goal (MCLG)** (the level of a contaminant in drinking water below which there is no known or expected health risk. MCLGs allow for a margin of safety). These goals take into account the risks of exposure for certain sensitive populations, such as infants, the elderly, and persons with compromised immune systems. These goals are not enforceable levels because they do not take available technology into consideration, and therefore are sometimes set at levels which public water systems cannot meet.

3. **Propose an enforceable standard in the form of a Maximum Contaminant Level (MCL)** (the maximum amount of a contaminant allowed in water delivered to a user of any public water system) **or a Treatment Technique (TT)** (required procedure or level of technological performance set when there is no reliable method to measure a contaminant at very low levels). MCLs are set as close to MCLGs as feasible, considering available technology and cost. Examples of rules requiring treatment techniques are the Surface Water Treatment Rule (requires disinfection and filtration) and the Lead and Copper Rule (requires optimized corrosion control). Water samples that contain lead or copper exceeding the **action level** trigger additional treatment or other requirements that a water system must follow. Required testing (monitoring) schedules are part of the enforceable standard.

   After determining a proposed MCL or TT that is as close to the MCLG as possible based on affordable technology, USEPA must complete an economic analysis to determine whether the benefits of that standard justify the costs. If not, USEPA may adjust the MCL for a particular class or group of systems to a level that "maximizes health risk reduction benefits at a cost that is justified by the benefits." USEPA may not adjust the MCL if the benefits justify the costs to large systems and small systems that are unlikely to receive variances.

4. **USEPA sets an enforceable MCL or TT.** After considering comments on the proposed standard and other relevant information, USEPA makes final an enforceable Maximum Contaminant Level or Treatment Technique, including required testing and reporting schedules.

5. States are authorized to grant **variances** from standards for systems serving up to 3,300 people if the systems cannot afford to comply with a rule (through treatment, an alternative source of water, or other restructuring) and the systems install EPA-approved variance technology. States can grant variances to systems serving 3,301 - 10,000 people with USEPA approval. SDWA does not allow small systems to have variances for microbial contaminants. Under certain circumstances **exemptions** from standards may be granted to allow extra time to seek other compliance options or financial assistance. After the exemption period expires, the public water system must be in compliance. The terms of variances and exemptions must ensure no unreasonable risk to public health.

Determining Whether Standards Are Needed for Other Contaminants – the Contaminant Candidate List

The 1996 Amendments to SDWA require USEPA to establish every 5 years a list of contaminants which are known or anticipated to occur in public water systems, and may require future regulations under SDWA. In establishing this contaminant candidate list USEPA has divided the contaminants among those which are priorities for additional research, those which need additional occurrence data, and those that are priorities for consideration in rulemaking. The list was developed with significant input from the scientific community and other interested parties. The next steps for USEPA are to determine which contaminants to address first in all categories, and to outline plans of action for making regulatory decisions for five or more contaminants by the year 2001.

In order to support this decision-making, USEPA has also established a National Contaminant Occurrence Database (NCOD), which stores data on the occurrence of both regulated and unregulated contaminants. USEPA is also required to list and develop regulations for monitoring certain unregulated contaminants. This monitoring data will provide the basis for identifying contaminants that may be placed on future Contaminant Candidate Lists and support the USEPA Administrator's decisions to regulate contaminants in the future.

COOPERATIVE EXTENSION AZ1008

Health Effects of Drinking Water Contaminants

Arizona Water Series: Number 5

The University of Arizona • College of Agriculture • Tucson, Arizona 85721 Revised 5/98

ELAINE HASSINGER
Assistant in Extension

JACK WATSON
Water Quality Specialist

Chemical contaminants occur in drinking water supplies throughout the United States, ranging from barely detectable amounts to levels that could possibly threaten human health. Determining the health effects of these contaminants is difficult, especially since researchers are still learning how chemicals react in the body to damage cells and cause illness.

Acute and Chronic Health Effects

Toxic doses of chemicals cause either acute or chronic health effects. An acute effect usually follows a large dose of a chemical and occurs almost immediately. Examples of acute health effects are nausea, lung irritation, skin rash, vomiting, dizziness and even death.

The levels of chemicals in drinking water, however, are seldom high enough to cause acute health effects. They are more likely to cause chronic health effects — effects that occur long after exposure to small amounts of a chemical. Examples of chronic health effects include: cancer, birth defects, organ damage, disorders of the nervous system, and damage to the immune system.

Evidence relating chronic health effects to specific drinking water contaminants is limited. In the absence of exact scientific information, scientists predict the likely adverse effects of chemicals in drinking water using laboratory animal studies and, when available, human data from clinical reports and epidemiological studies. The possible chronic health effects of the chemicals listed in this fact sheet are conservative estimates, rarely based on documented human health effects.

Setting Standards

In setting standards for drinking water contaminants, regulators estimate the concentration of a contaminant that a person can drink safely over a lifetime. These calculations are based on all available toxicological information and allow a generous safety margin. The following chart lists contaminants currently regulated by U.S. Environmental Protection Agency (EPA) standards.

The EPA standard for drinking water, the Maximum Contaminant Level (MCL), is the highest amount of a contaminant allowed in drinking water supplied by municipal water systems. Although MCLs are set primarily to protect health, they also take into consideration the feasibility and cost of analysis and treatment of the regulated contaminant.

Contaminants are regulated when they occur in drinking water supplies and are expected to threaten public health. The EPA will continue to set standards for many other drinking water contaminants not listed in this fact sheet which meet these criteria.

National Primary Drinking Water Standards

ORGANIC CHEMICALS	MCL (mg/L)[1]	HEALTH EFFECTS
Acrylamide	TT[2]	probable cancer, nervous system
Adipate (diethylhexyl)	0.4	liver damage, reduced bone mass
Alachlor	0.002	probable cancer
Atrazine	0.003	reproductive and cardiac
Benzene	0.005	cancer, chromosome changes

[1] Milligrams per liter (mg/L) = one part per million (ppm) or 1 ounce in 7800 gallons.
[2] TT = Treatment technique requirement in effect.

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ORGANIC CHEMICALS	MCL (mg/L)[1]	HEALTH EFFECTS
Benzo(a)pyrene (PAH)	0.0002	developmental and reproductive effects
Carbofuran	0.04	nervous and reproductive system
Carbon tetrachloride	0.005	cancer, liver damage
Chlordane	0.002	probable cancer
2,4-D	0.07	liver, kidney, nervous system
Dalapon	0.2	increased kidney-to-body weight
Di[2-ethylhexyl]adipate	0.4	liver damage, reduced bone mass
Dibromochloropropane (DBCP)	0.0002	probable cancer
o-Dichlorobenzene	0.6	liver, kidney, nervous system, blood cells
p-Dichlorobenzene	0.075	liver, anemia, skin lesions
1,2-Dichloroethane	0.005	probable cancer
1,1-Dichloroethylene	0.007	liver/kidney effects, cancer, toxicity to fetus
cis-1,2-Dichloroethylene	0.07	nervous and circulatory systems, liver
trans-1,2-Dichloroethylene	0.1	nervous and circulatory systems, liver
Dichloromethane	0.005	probable cancer, liver damage
1,2-Dichloropropane	0.005	probable cancer, liver, lungs, kidney
Di(2-ethylhexyl)phthalate (PAE)	0.006	possible cancer, liver, reproductive effects
Dinoseb	0.007	decreased body and thyroid weight
Dioxin (2,3,7,8-TCDD)	3.0×10^{-8}	liver damage, birth defects, probable cancer
Diquat	0.02	cataracts
Endothall	0.1	increased organ weight
Endrin	0.002	nervous system, kidney effects
Epichlorohydrin	TT[2]	probable cancer, changes in blood and chromosomes
Ethylbenzene	0.7	liver, kidney, nervous system, eyes
Ethylene dibromide (EDB)	0.00005	probable cancer
Glyphosphate	0.7	lung congestion
Heptachlor	0.0004	probable cancer
Heptachlor epoxide	0.0002	probable cancer
Hexachlorobenzene (HCB)	0.001	skin lesions, nerve and liver damage
Hexachlorocyclopentadiene (HEX)	0.05	damage to liver, kidney, stomach, heart
Lindane	0.0002	liver, kidney
Methoxychlor	0.04	liver, kidney, nervous system, heart
Monochlorobenzene (Chlorobenzene)	0.1	liver, kidney, nervous system

[1] Milligrams per liter (mg/L) = one part per million (ppm) or 1 ounce in 7800 gallons.

[2] TT = Treatment technique requirement in effect.

ORGANIC CHEMICALS	MCL (mg/L)[1]	HEALTH EFFECTS
Oxamyl (Vydate)	0.2	decreased body weight
Pentachlorophenol	0.001	probable cancer, liver, kidney, reproductive effects
Picloram	0.5	liver damage
Polychlorinated byphenyls (PCBs)	0.0005	possible cancer, nose and throat irritation, liver function
Simazine	0.004	possible cancer, tremors, liver, kidney, nervous system
Styrene	0.1	liver, nervous system, cancer
Tetrachloroethylene	0.005	probable cancer, liver, kidney, nervous system
Toluene	1.0	kidney, liver, nervous system (memory, speech, hearing)
Toxaphene	0.003	possible cancer, liver, kidney, nervous system
2-4-5-TP (Silvex)	0.05	liver, kidney
1,2,4-Trichlorobenzene	0.07	increased adrenal gland weight
1,1,1-Trichloroethane	0.2	nervous system
1,1,2-Trichloroethane	0.005	liver, kidney, cancer
Trichloroethylene (TCE)	0.005	possible cancer, liver damage
Vinyl chloride	0.002	cancer, liver, nervous system
Xylenes (Total)	10.0	liver, kidney, cancer, bladder, respiratory tract

[1] Milligrams per liter (mg/L) = one part per million (ppm) or 1 ounce in 7800 gallons.
[2] TT = Treatment technique requirement in effect.

RADIONUCLIDES	MCL	HEALTH EFFECTS
Beta particle and photon activity	4 mrem/yr[1]	cancer
Gross alpha particle activity	15 pCi/L[2]	cancer
Combined radium 226 + 228	5 pCi/L[2]	bone cancer

[1] "Rem" (Roentgen Equivalents in Man) means a dosage of ionizing radiation that gives the same biological effect as one roentgen of X-ray or gamma-ray radiation. A millirem (mrem) is 1/1000 of a rem.
[2] "Picocurie" (pCi) is the quantity of radioactive material producing 2.22 nuclear transformations per minute.

An Explanation of Treatment Technique

Treatment Technique requirements vary with each contaminant. In general, depending upon the size of the population served by a water supplier, a predetermined number of samples must be taken within a specific time period. Only a certain percentage of these samples may exceed a specified level for each contaminant. For example, a water supplier serving more than 100,000 people must sample for lead from 100 household taps every six months. If more than 10% of these samples exceed 0.015 mg/L of lead, the water supplier must begin treatment. Treatment may consist of reducing the corrosivity of the water (highly corrosive water tends to leach lead out from pipe fittings), or removing the lead from the supply source, or replacing water lines that contain lead compounds. For microbes, treatment standards should reduce the risk of infection to less than one in 10,000 per year.

INORGANIC CHEMICALS	MCL (mg/L)[1]	HEALTH EFFECTS
Antimony	0.006	possible cancer
Arsenic[2]	0.05	dermal and nervous system toxicity
Asbestos	7 MFL (million fibers per liter, >10 microns long)	lung disease, cancer
Barium	2.0	circulatory system (high blood pressure)
Beryllium	0.004	bones, lung, cancer
Cadmium	0.005	kidney, liver, bones, blood
Chromium (total)	0.1	liver/kidney, skin, circulatory system, nerve tissues
Copper (at tap)	TT[3]	stomach and intestinal distress, liver, kidney, anemia
Cyanide	0.2	weight loss, thyroid, nerve damage
Fluoride	4.0	skeletal damage
Lead (at tap)	TT[3]	central and peripheral nervous system damage, kidney, highly toxic to infants and pregnant women
Mercury (inorganic)	0.002	kidney, nervous system
Nickel	0.1	heart and liver damage, skin irritation
Nitrate-Nitrogen	10.0	spleen hemorrhage, methemoglobinemia
Nitrite (as N)	1.0	spleen hemorrhage, methemoglobinemia
Nitrate + Nitrite (both as N)	10.0	spleen hemorrhage, methemoglobinemia
Selenium	0.05	nervous and circulatory system, liver, kidney, hair loss
Thallium	0.002	blood changes, liver, kidney, hair loss

[1] Milligrams per liter (mg/L) = one part per million (ppm) or 1 ounce in 7800 gallons.
[2] Under review
[3] TT = Treatment Technique requirement in effect.

MICROBIOLOGICAL	MCL	HEALTH EFFECTS
Giardia lamblia	TT[1]	stomach and intestinal distress
Legionella	TT[1]	Legionnaire's disease (pneumonia)
Standard Plate Count	TT[1]	varies with organism
Turbidity	PS[2]	interferes with disinfection
Viruses	TT[1]	intestinal distress, infectious hepatitis

[1] Treatment Technique requirement in effect.
[2] PS (Performance Standard) 0.5 NTU - 1.0 NTU, (Nephelometric Turbidity Unit).

National Secondary Drinking Water Standards

CONTAMINANTS	SUGGESTED LEVELS	EFFECTS
Aluminum	0.05-0.2 mg/l	discoloration of water
Chloride	250 mg/l	taste, corrosion of pipes
Color	15 color units	aesthetic
Copper	1 mg/l	taste, staining of porcelain
Corrosivity	non-corrosive	aesthetic and health related (corrosive water can leach lead from pipes into drinking water).
Fluoride	2.0 mg/l	brownish discoloration of teeth
Foaming agents	0.5 mg/l	aesthetic
Iron	0.3 mg/l	taste, staining of laundry
Manganese	0.05 mg/l	taste, staining of laundry
Odor	3 (Threshold Odor Number)	aesthetic
pH	6.5 - 8.5	water is too corrosive
Silver	0.1 mg/l	discoloration of the skin (argyria)
Sulfate	250 mg/l	taste, laxative effects
Total Dissolved Solids (TDS)	500 mg/l	taste and possible relation between low hardness and cardiovascular disease, also an indicator of corrosivity (related to lead levels in water), can damage plumbing and limit effectiveness of detergents.
Zinc	5 mg/l	taste

Note: Copper and fluoride appear on both the Primary and Secondary Standards lists. The effects of each contaminant at the lower levels found on the Secondary list are aesthetic only. At higher concentrations each can cause adverse health reactions and are therefore listed as Primary Standards. "Aesthetic" refers to effects of contaminants that may make water look, taste, or smell unpleasant, yet are not necessarily harmful to health.

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Appendix D Glossary

Cryptosporidium

A protozoan associated with the disease cryptosporidiosis in humans. The disease can be transmitted through ingestion of drinking water, person-to-person contact, or other exposure routes. Cryptosporidiosis may cause acute diarrhea, abdominal pain, vomiting, and fever that last 1-2 weeks in healthy adults, but may be chronic or fatal in immunocompromised people.

Exposure

Contact between a person and a chemical. Exposures are calculated as the amount of chemical available for absorption by a person.

Giardia lamblia

A protozoan, which can survive in water for 1 to 3 months, associated with the disease giardiasis. Ingestion of this protozoan in contaminated drinking water, exposure from person-to-person contact, and other exposure routes may cause giardiasis. The symptoms of this gastrointestinal disease may persist for weeks or months and include diarrhea, fatigue, and cramps.

Maximum Contaminant Level (MCL)

Maximum permissible level of a contaminant in water which is delivered to any user of a public water system.

Nitrates

Inorganic compounds that can enter water supplies from fertilizer runoff and sanitary wastewater discharges. Nitrates in drinking water are associated with methemoglobinemia, or blue baby syndrome, which results from interferences in the blood's ability to carry oxygen.

Organics

Chemical molecules that contain carbon and other elements such as hydrogen. Organic contaminants of concern to drinking water include chlorohydrocarbons, pesticides, and others.

Per capita

Per person; generally used in expressions of water use, gallons per capita per day (gpcd).

Point-of-Use Water Treatment

Refers to devices used in the home or office on a specific tap to provide additional drinking water treatment.

Point-of-Entry Water Treatment

Refers to devices used in the home where water pipes enter to provide additional treatment of drinking water used throughout the home.

Radionuclides

Elements that undergo a process of natural decay. As radionuclides decay, they emit radiation in the form of alpha or beta particles and gamma photons. Radiation can cause adverse health effects, such as cancer, so limits are placed on radionuclide concentrations in drinking water.

Risk

The potential for harm to people exposed to chemicals. In order for there to be risk, there must be hazard and there must be exposure.

Treatment Technique

A specific treatment method required by EPA to be used to control the level of a contaminant in drinking water. In specific cases where EPA has determined it is not technically or economically feasible to establish an MCL, EPA can instead specify a treatment technique.

Total Coliform

Bacteria that are used as indicators of fecal contaminants in drinking water.

Toxicity

The property of a chemical to harm people who come into contact with it.

Volatile Organics

Chemicals that, as liquid, evaporate into the air.

Appendix A: National Primary Drinking Water Standards

Contaminants	MCLG (mg/L)	MCL (mg/L)	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Fluoride	4.0	4.0	Skeletal and dental fluorosis	Natural deposits, fertilizer, aluminum industries, water additive
Volatile Organics				
Benzene	zero	0.005	Cancer	Some foods, gas, drugs, pesticide, paint, plastic industries
Carbon Tetrachloride	zero	0.005	Cancer	Solvents and their degradation products
p-Dichlorobenzene	0.075	0.075	Cancer	Room and water deodorants, and "mothballs"
1,2-Dichloroethane	zero	0.005	Cancer	Leaded gasoline, fumigants, paints
1,1-Dichloroethylene	0.007	0.007	Cancer	Plastics, dyes, perfumes, paints
Trichloroethylene	zero	0.005	Cancer	Textiles, adhesives and metal degreasers
1,1,1-Trichloroethane	0.2	0.2	Liver, Nervous system effects	Adhesives, aerosols, textiles, paints, inks, metal degreasers
Vinyl Chloride	zero	0.002	Cancer	May leach from PVC pipe, formed by solvent break down
Coliform and Surface Water Treatment				
Giardia Lamblia	zero	TT	Gastroenteric disease	Human and animal fecal waste
Legionella	N/A	TT	Legionnaires disease	Indigenous to natural waters, can grow in water heating systems
Standard Plate Count	N/A	TT	Indicates water quality, effectiveness of treatment	
Total Coliform *	zero	<5% a	Indicates gastroenteric pathogens	Human and animal fecal waste
Turbidity *	N/A	TT	Interferes with disinfection, filtration	Soil runoff
Viruses	zero	TT	Gastroenteric disease	Human and animal fecal waste
Inorganics				
Antimony	zero	0.006	Cancer	Fire retardants, ceramics, electronics, fireworks, solder
Asbestos (>10um)	7MFL	7MFL	Cancer	Natural deposits, asbestos cement in water systems
Barium *	2	2	Circulatory system effects	Natural deposits, pigments, epoxy sealants, spent coal
Beryllium	0.004	0.004	Bone, lung damage	Electrical, aerospace, defense industries
Cadmium *	0.005	0.005	Kidney effects	Galvanized pipe corrosion, natural deposits, batteries, paints
Chromium * (total)	0.1	0.1	Liver, kidney, circulatory disorders	Natural deposits, mining, electroplating, pigments
Cyanide	0.2	0.2	Thyroid, nervous system damage	Electroplating, steel, plastics, mining, fertilizer
Mercury * (inorganic)	0.002	0.002	Kidney, nervous system disorders	Crop runoff, natural deposits, batteries, electrical switches
Nitrate *	10	10	Methemoglobinemia a	Animal waste, fertilizer, natural deposits, septic tanks, sewage
Nitrite	1	1	Methemoglobinemia	Same as nitrate, rapidly converted to nitrate
Selenium *	0.05	0.05	Liver damage	Natural deposits, mining, smelting, coal or combustion
Thallium	0.0005	0.002	Kidney, liver, brain, intestinal	Electronics, drugs, alloys, glass
Organics				
Acrylamide	zero	TT	Cancer, nervous system effects	Polymers used in sewage/wastewater treatment
Adipate, di(2-ethylhexyl)	0.4	0.4	Decreased body weight	Synthetic rubber, food packaging, cosmetics
Alachlor	zero	0.002	Cancer	Runoff from herbicide on corn and soybeans
Atrazine	0.003	0.003	Mammary gland tumors	Runoff from use as herbicide on corn and non-cropland
Carbofuran	0.04	0.04	Nervous, reproductive system effects	Soil fumigant on corn and cotton, restricted use pesticide
Chlordane *	zero	0.002	Cancer	Leaching from soil fumigant treatment
Chlorobenzene	0.1	0.1	Nervous system and liver effects	Waste solvent from metal degreasing processes
Dalapon	0.2	0.2	Liver and kidney effects	Herbicide on rangelands, lawns, roadsides, waterways
Dibromochloropropane	zero	0.0002	Cancer	Soil fumigant on soybeans, cotton, pineapples, orchards
p-Dichlorobenzene	0.6	0.6	Liver, kidney, blood cell damage	Paints, engine cleaning compounds, dyes, chemical wastes
cis-1,2-Dichloroethylene	0.07	0.07	Liver, kidney, nervous system disorders	Waste industrial manufacturing solvents

(a) See "Contaminants with primary standards which have been revised." TT = Special treatment techniques required.
MFL = million fibers per liter. * = also Phase II or Phase V contaminant.

Contaminants	MCLG (mg/L)	MCL (mg/L)	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Organics (continued)				
trans-1,2-Dichloroethylene	0.1	0.1	Liver, kidney, nervous, circulatory	Waste industrial extraction solvents
Dichloromethane	zero	0.005	Cancer	Paint stripper, metal degreaser, propellant, extraction
1,2-Dichloropropane	zero	0.005	Liver, kidney effects, Cancer	Soil fumigant, waste industrial solvents
Dinoseb	0.007	0.007	Thyroid, reproductive organ damage	Runoff of herbicide from crop and non-crop applications
Dioxin	zero	0.00000003	Cancer	Chemical production by-product, impurity in herbicides
Diquat	0.02	0.02	Liver, kidney, eye effects	Runoff of herbicide on land & aquatic weeds
2,4-D *	0.07	0.07	Liver and kidney damage	Runoff from herbicide on wheat, corn, rangelands, lawns
Endothal	0.1	0.1	Liver, kidney, gastrointestinal	Herbicide on crops, land/aquatic weeds, rapidly degraded
Endrin	0.002	0.002	Liver, kidney, heart damage	Pesticide on insects, rodents, birds, restricted since 1980
Epichlorohydrin	zero	TT	Cancer	Water treatment chemicals, waste epoxy resins, coatings
Ethylbenzene	0.7	0.7	Liver, kidney, nervous system	Gasoline, insecticides, chemical manufacturing wastes
Ethylene dibromide	zero	0.00005	Cancer	Leaded gasoline additives, leaching of soil fumigant
Glyphosate	0.7	0.7	Liver, kidney damage	Herbicide on grasses, weeds, brush
Heptachlor	zero	0.0004	Cancer	Leaching of insecticide for termites, very few crops
Heptachlor epoxide	zero	0.0002	Cancer	Biodegradation of heptachlor
Hexachlorobenzene	zero	0.001	Cancer	Pesticide production waste by-product
Hexachlorocyclopentadiene	0.05	0.05	Kidney, stomach damage	Pesticide production intermediate
Lindane	0.0002	0.0002	Liver, kidney, nerve, immune circul	Insecticide on cattle, lumber, gardens, restricted 1983
Methoxychlor	0.04	0.04	Growth, liver, kidney, nerve effects	Insecticide for fruits, vegetables, alfalfa, livestock, pets
Oxamyl (Vydate)	0.2	0.2	Kidney damage	Insecticide on apples, potatoes, tomatoes
PAHs (benzo(a)pyrene)	zero	0.0002	Cancer	Coal tar coatings, burning organic matter, volcanoes, fossil fuels
PCBs	zero	0.0005	Cancer	Coolant oils from electrical transformers, plasticizers
Pentachlorophenol	zero	0.001	Liver and kidney effects, and cancer	Wood preservatives, herbicide, cooling tower wastes
Phthalate, di (2-ethylhexyl)	zero	0.006	Cancer	PVC and other plastics
Picloram	0.5	0.5	Kidney, liver damage	Herbicide on broadleaf and woody plants
Simazine	0.004	0.004	Cancer	Herbicide on grass sod, some crops, aquatic algae
Styrene	0.1	0.1	Liver, nervous system damage	Plastics, rubber, resin, drug industries, leachate from city landfills
Tetrachloroethylene	zero	0.005	Cancer	Improper disposal of dry cleaning and other solvents
Toluene	1	1	Liver, kidney, nervous, circulatory	Gasoline additive, manufacturing and solvent operations
Toxaphene	zero	0.003	Cancer	Insecticide on cattle, cotton, soybeans, banned 1982
2,4,5-TP	0.05	0.05	Liver and kidney damage	Herbicide on crops, right-of-way, golf courses, banned 1983
1,2,4-Trichlorobenzene	0.07	0.07	Liver, kidney damage	Herbicide production, dye carrier
1,1,2-Trichloroethane	0.003	0.005	Kidney, liver, nervous system	Solvent in rubber other organic products, chemical production wastes
Xylenes (total)	10	10	Liver, kidney, nervous system	By-product of gasoline refining, paints, inks, detergents
Lead and Copper				
Lead *	zero	TT a	Kidneys, nervous system damage	Natural/industrial deposits, plumbing, solder, brass alloy faucets
Copper	1.3	TT a	Gastrointestinal disease	Natural/industrial deposits, wood preservatives, plumbing
Other Interim Standards				
Beta/photon emitters	zero	4 mrem/yr	Cancer	Decay of radionuclides in natural and man-made deposits
Alpha emitters	zero	15 pCi/L	Cancer	Decay of radionuclides in natural deposits
Combined Radium 226/228	zero	5 pCi/L	Bone cancer	Natural deposits
Arsenic *	0.05	0.05	Skin, nervous system toxicity	Natural deposits, Smelters, glass, electronics, wastes, Orchards
Total Trihalomethanes	zero	0.10	Cancer	Drinking water chlorination by-products

Notes: *Contaminants with interim standards which have been revised. TT=Specific treatment techniques required.
a: Action Level 0.015mg/L. b: Action Level 1.3mg/L. pCi: picocuries

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Water Testing

Ernestine Porter, Roy Taylor and Robert L. Mahler

Should You Have Your Water Tested?

Whether to have your water tested is a serious question that concerns your health and that of your family. Your water should be safe to drink and acceptable for all other household uses. Contaminated water can cause illness and perhaps even death. In addition, a variety of less serious problems such as bad taste, off-color, odor and staining of clothes or fixtures are symptoms of water quality problems.

Even water that appears problem-free and crystal clear may not be safe or acceptable. Even so, not all people need to test their water. Testing for all possible contaminants is impractical and unnecessary.

When Should You Test Your Water?

Whether you have a public or private water supply, you should have your water tested if the following situations arise:

Situation	Test
Family members or house guests have recurrent incidents of gastrointestinal illness.	Test for coliform bacteria, nitrate and sulfate.
Household water plumbing contains lead pipes, fittings or solder joints.	Test for pH, corrosion index, lead, copper, cadmium and zinc.
You are buying a home and wish to assess the safety and quality of the existing water supply.	Test for coliform bacteria, nitrate, lead, iron, hardness, pH, sulfate, total dissolved solids (TDS), corrosion index and other parameters depending on proximity to potential sources of contamination.
You need a water softener to treat hard water.	Test for iron and manganese, which decrease the efficiency of cation exchange softeners, before purchase and installation.
You wish to monitor the efficiency and performance of home water treatment equipment.	Test for the specific water problem being treated upon installation, at regular intervals after installation and if water quality changes.
Water stains plumbing fixtures and laundry.	Test for iron, manganese and copper.
Water has an objectionable taste or smell.	Test for hydrogen sulfide, pH, corrosion index, copper, lead, iron, zinc, sodium, chloride and TDS.
Water appears cloudy, frothy or colored.	Test for color, turbidity and detergents.
Pipes or plumbing show signs of corrosion.	Test for corrosion index, pH, lead, iron, manganese, copper and zinc.
Water leaves scaly residues and soap scum and decreases the cleaning action of soaps and detergents.	Test for hardness.
Water supply equipment (pump, chlorinators, etc.) wears rapidly.	Test for pH, corrosion index.

Public vs. Private Water Supplies

Many homeowners get water simply by turning on the faucet and making a monthly payment to a municipal or other local water system. They use public water supplies in which individual households are connected to the same water system. Public systems draw water from rivers, reservoirs, springs and groundwater wells.

In private systems, individuals or individual households provide their own systems. Most private drinking water comes from wells, sometimes from springs and ponds.

If your water comes from a public water system, your water is tested regularly for contaminants that are covered by federal and state standards. These contaminants include pathogens, radioactive elements and certain toxic chemicals. However, some public water supplies may have water quality problems caused by inadequate treatment facilities or distribution systems. Some rural water supply districts do not have enough money to hire trained specialists or to comply immediately with expanding government requirements. In addition, corrosive water or deteriorating household pipes may add contaminants to drinking water after it enters the house.

If your drinking water comes from your own well, you alone are responsible for ensuring its safety. Routine testing for a few of the most common contaminants is highly recommended. Even if your water supply currently is pure and safe, regular testing can be valuable because it establishes a record of water quality. This record can be helpful in solving any future problems and in establishing or assessing damages to your water supply.

Testing Private Water Supplies

Routine Tests -- The following testing frequencies are guidelines. Test more often if you suspect a problem with the quality of your water supply.

- **Once each year,** test for coliform bacteria, nitrate, pH and total dissolved solids (TDS). The best times to test for these contaminants are during spring or summer following a rainy period. These tests also should be conducted after repairing or replacing an old well or pipes and after installing a new pump.
- **Every 3 years,** test for sulfate, chloride, iron, manganese, lead, hardness and corrosion index.
- **If a new baby is expected** in the household, it is a good idea to test for nitrate in the early months of pregnancy, before bringing the infant home and again during the first 6 months of the baby's life.

Special Situations -- Where you live, and what is next to where you live, can sometimes affect the quality of your water. If someone in your family becomes ill or if the taste, odor or color of your water changes, your water supply may be contaminated.

Situation	Test
Your well is in an area of intensive agricultural use.	Test for pesticides commonly used in the area, coliform bacteria, nitrate, pH and TDS.
You live near a mining operation.	Test for iron, lead, arsenic, manganese, aluminum, pH and corrosion index.
Your well is near a gas drilling operation.	Test for chloride, sodium, barium and strontium.
Your water smells of gasoline or fuel oil and your well is located near an operating or abandoned gas station or near buried fuel storage tanks.	Test for fuel components or volatile organic compounds (VOC).
Your well is near a road salt storage site or a heavily salted roadway and the w ter tastes salty or corrosion appears on pipes.	Test for chloride, TDS and sodium.

Collecting Test Samples

Most esting laboratories or services provide their own sample containers. Use the containers and carefully follow the laboratory's instructions for collecting, preserving and handling water samples. Samples for coliform bacteria testing must be collected ir sterile containers under sterile conditions. Some collection procedures call for water to run from an inside tap for several minutes before you fill the sample containers. Other instructions ask you to collect samples in the morning, after water has been confined in the pipes overnight. Samples should arrive at a laboratory within 24 hours of collection.

Laboratories may sometimes send a trained technician to collect the sample or to analyze the sample in your home. Ask if this service is available. You may obtain better samples and therefore more reliable test results.

Record all your water test results as a reference for future testing. Even slight changes in contaminant concentrations are good indicators of new water problems. By comparing recent test results with past results, you may discover you need a change in treatment or that a treatment device is working poorly.

Testing Services

- Public water supply systems are tested regularly for primary contaminants, monitored for levels of sodium and certain unregulated chemical contaminants and examined for corrosion in the water distribution system. They will provide water quality reports upon request.
- Private testing laboratories are listed in the yellow pages of the telephone book. Make sure they are certified by your state health department.
- County and state health laboratories, departments of health and local hospital laboratories often provide water testing services.
- Water treatment companies and plumbing supply stores may offer certain free tests in your home.
- Local engineering firms may test water for certain contaminants.
- The University of Idaho offers water testing services.
- Be wary of companies offering "free home water testing." Some of them may be interested only in selling you a water treatment device, whether or not you need it.

Contact the Extension agent in your county for information about water testing in your area.

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University of Idaho
College of Agricultural and Life Sciences

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Water Testing and Interpreting Your Results

by Meg Burgett
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Alaska Cooperative Extension

If you're like many Alaskans, your family's drinking water comes from a private, on-site well-your well. The health and well-being of your family depends in a large part on the quality of water from that well. Daily activities of those near your well have a direct impact on the quality of drinking water. To protect that water, your actions should minimize any risk to any surrounding wells. Periodically checking your water supply will assure you that your efforts have been successful and the water your family is drinking is safe.

Which Tests?

Water tests come in a variety of sizes and options. You can test your water for just a few indicators, or for a comprehensive analysis. As with all things, the more you ask for, the more it will cost you.

When deciding which tests are appropriate for you, make sure the most important indicators for your situation are selected, and that costs are kept reasonable. Frequently, labs will group the most common household tests into a "package" for convenience. For an accurate assessment of the quality of your water, have it tested by a certified testing lab.

The following four tests address the most common and serious health concerns, and indicated the possibility of a contaminated water supply.

NITRATES

What is it? Nitrates are a major component of fertilizer and wastewater. They also result from the breakdown of organic matter buried in the soil. Excess nitrates in drinking water could be the result of a number of things: the overuse of fertilizers close to the well; the presence of septic effluent in the groundwater supplies caused by a failed or failing septic system or inadequate dilution or separation between the system and the well; or runoff containing animal wastes close to the well.

Drinking water that has high levels of nitrate can cause a serious illness in infants under the age of six months. This condition is called methemoglobinemia or "blue baby" syndrome, and can result in death.

Methemoglobinemia
"Blue Baby Syndrome" When infants ingest nitrate, the nitrate is converted to nitrite in the body. Nitrites interfere with the blood's ability to carry oxygen, and the infant appears slightly "blue."

Acceptable Levels? Water with nitrate levels above 10 parts per million (ppm) nitrate as nitrogen (mg/l NO3-N), should not be given to children under the age of six months, or pregnant women. If your water has nitrate levels above 10 ppm, consult your physician before using the water for any drinking water purposes.

Treatment Options? Nitrate is not readily removed by filtration or other common home water treatment systems. The best method for limiting nitrate in well water is by controlling nearby sources of nitrate.

BACTERIA

What is it? Bacteria occur naturally in the environment. While some are not harmful to human health, others such as fecal bacteria present a very serious health risk. Fecal bacteria belong to a group of bacteria called coliform bacteria. Labs routinely test for coliform bacteria to determine if your drinking water has been contaminated with surface runoff wastewater. Wastewater not only contains bacteria, but may also contain other microorganisms such as viruses and protozoa that are associated with severe illnesses.

Since not every bacteria can be reasonably tested, labs routinely test for coliform bacteria as an indicator of the presence of

Alaska Cooperative Extension

Surface Water

A few Alaskans, especially in rural areas, use surface water for their family's source of water. If you use surface water, you need to have a good water treatment system that includes disinfection and filtration, to be sure your water is safe to drink. Check with your local water treatment companies for different kinds of surface water systems, or contact the U.S. EPA for a copy of their publication, "Manual of Individual and Non-Public Water Supply Systems," for a description of surface water treatment methods.

Sometimes, a well can also have surface water influence. This means that the water on the surface is in direct contact with the groundwater supply. There are no hard and fast guidelines for determining when a well is surface water influenced. However, shallow wells (less than 30 feet) and wells close to surface water sources (less than 100 feet to the lake or creek) are more at risk of contamination by disease-causing micro-organisms frequently found in surface water. The quality of surface water supplies fluctuates much more than that of groundwater (well water) supplies. It is affected by changes in temperature, algal blooms, amount of rainfall and runoff, and the activities in the watershed. If your well is shallow or close to a surface water source, you should have it tested by a certified laboratory to determine if it is surface water influenced, or install a water treatment system that includes disinfection and filtration.

this type of contamination. This test is used to indicate the "potability" of drinking water. Coliform bacteria enter the environment through the discharge of untreated waste or runoff containing animal and/or human wastes.

Bacteria is most commonly a problem in surface waters. Bacteria, protozoa and viruses can cause severe illness if ingested. Generally not a problem in groundwater sources (i.e. wells), it's presence could signal a real threat.

Acceptable Level? If your drinking water tests positive for coliform bactera, other organisms may be present also. You should take immediate steps to treat your water. To prevent illness, drinking water should be completely free of coliform bacteria.

Treatment Options? Bacteria can only be killed by disinfection (such as chlorine-more for cloudy water, less for clear, 8-10 drops/gallon), or boiling the water for several minutes (3-5 minutes) prior to drinking. Filtration can help improve the performance of disinfectants by reducing the numbers of micro-organisms, and by removing sediments that interfere with the disinfection process. Filtration alone cannot generally remove all microorganisms and should not be considered completely effective.

ARSENIC

What is it? Natural ore deposits of arsenopyrite, a gold bearing mineral, may release arsenic to groundwater under anaerobic (no oxygen) conditions. Some stream sediments have also been found to contain arsenic, particularly those draining through placer mine tailings deposits.

Naturally occurring arsenic has been found in groundwater wells in the Fairbanks area, on the Seward and Kenai Peninsulas and Southcentral Alaska around Wasilla. It is a highly toxic contaminant and listed as a hazardous material. A suspected carcinogen, it is also a teratogen—capable of crossing the placental membrane into the metabolic system of unborn children. The actual toxicity to humans varies. Because it is slow to leave the body, arsenic is a cumulative substance.

Acceptable Levels? The maximum level for arsenic in drinking water is set at 0.05 (parts per million).

Treatment Options? Arsenic can be removed from drinking water by a number of available technologies, the choice of which depends on the amount of water to be treated, the amount of arsenic present, and the presence of other contaminants.

Other water problems.

Your water may contain other substances that while not dangerous to your health can cause objectionable tastes or odors, or staining of appliances and fixtures. If these qualities are not desirable to your family, home treatment systems can eliminate any of these problems. To ensure that you select the appropriate equipment for your home, the level of a number of minerals needs to be determined.

IRON

What is it? Excess iron in groundwater supplies comes from the parent material of the soil around the well. It can cause a metallic taste, stain clothing and fixtures, and promote the growth of iron bacteria in the water system.

Iron is not considered toxic, but affects the appearance and palatability of the drinking water.

Acceptable Levels? An upper limit of 0.3 ppm of iron has been set for drinking water.

Treatment Options? Depending upon concentrations, iron can be removed by water softeners, or an iron filter with a greensand media and potassium permanganate as a regenerant.

MANGANESE

What is it? Like iron, manganese originates from the soil around a well. It typically produces black staining and can give water an off-taste. Manganese is not considered toxic but does affect the appearance and palatability of the water.

Acceptable Levels? An upper limit of 0.05 ppm manganese has been set for drinking water supplies.

Treatment Options? Again, depending upon concentrations, manganese can be removed by water softeners, or an iron filter as described above.

HARDNESS

What is it? Hard water comes from elevated levels of calcium, magnesium and other similar substances found in the soil around a well. Hard water will tend to deposit calcium carbonate (limestone) scale in plumbing systems, particularly on hot water or boiler heating elements. Soft water tends to be corrosive, dissolving metal pipes and fittings.

Acceptable Levels? There is no toxicity associated with hardness and no health standard has been established by the environmental regulatory agencies.

Treatment Options? Water softeners offer the best treatment method for hard or soft water.

HYDROGEN SULFIDE

What is it? Hydrogen sulfide can be present in ground water containing sulfur under anaerobic (no oxygen) conditions. It is also the product of a bacterial reaction in the presence of sulfate.

Hydrogen sulfide gives water a "rotten egg" taste and odor and is often more noticeable in hot water than cold water. In drinking water supplies it is normally present only at "nuisance" levels.

Acceptable Levels? Like hardness, no health standard has been established by the environmental regulatory agencies for this element.

Treatment Options? Hydrogen sulfide can be converted back to sulfate by any oxidant such as dissolved air, chlorine, or potassium permanganate used to regenerate iron filters. If air is used, the water must be detained in a tank and aerated with a diffuser similar to an aquarium. If the hydrogen sulfide is being produced by bacteria growing in the plumbing or treatment system, a thorough disinfection with chlorine is normally required to eliminate the growths.

Testing Frequency

Drinking water supplies should be tested for bacteria and nitrate at least once a year. The other tests discussed here, should be made regularly (every three years or so).

Events that occur near your drinking water well may indicate a need to have additional tests performed on your water. If your well is located near a fuel oil spill (this would also include any petroleum products), it would be advisable to have your water tested for Volatile Organic Chemicals (VOCs). A less expensive test, Total Petroleum Hydrocarbon or TPH, will also detect the presence of spilled fuel oil. Have your water supply checked if you have drilled a second well or changed the pump or plumbing. Also have the water supply tested if there is new, or increased activity in your area that has the potential to contaminate a water supply.

For more information:

If you have more questions concerning your drinking water or would like more information on this subject, contact your local offices of the Alaska Cooperative Extension (ACE) or the Alaska Department of Environmental Conservation (ADEC). For a listing of certified water test labs in Alaska, check the ADEC website at: http://www.state.ak.us/dec/deh/water

For an excellent reference on this topic, check out Plain Talk About Drinking Water: Questions and Answers about the Water you Drink by Dr. James Symons.

Units of Measure

The most commonly used unit of measure for water tests is milligrams per liter (mg/l). Generally speaking, this is equal to one part per million (ppm)—one part contaminant to one million parts water. Some toxins are reported in even smaller units, parts per billion (ppb).

(For a little perspective, one ppm would be approximately equal to one or two grains of sugar dissolved in a bath tub full of water)

The following table gives a subjective interpretation of relative hardness levels using the two most common units of measure for hardness.

Relative Hardness	*ppm (as $CaCO_3$)*	*grains/ gallon*
soft	*0 - 75*	*0 - 4.39*
mod. hard	*75 - 150*	*4.39 -8.77*
hard	*150 - 300*	*8.77-17.54*
very hard	*>300*	*>17.54*

ALASKA COOPERATIVE EXTENSION OFFICES

Anchorage ..... (907) 786-6300
2221 E. Northern Lights Blvd., #118 fax 786-6312
Anchorage, AK 99508-4143

Bethel 4-H Office ..... (907) 543-2088
P.O. Box 388 fax 543-2083
Bethel, AK 99559

Delta Junction District ..... (907) 895-4215
Jarvis Bldg. fax 895-4210
P.O. Box 349
Delta Junction, AK 99737

Fairbanks State Office ..... (907) 474-7246
University of Alaska Fairbanks fax 474-6971
P.O. Box 756180
Fairbanks, AK 99775-6180

Fairbanks—Tanana District ..... (907) 474-1530
1000 University Ave., Room 138 fax 474-6885
Old U-Park School
P.O. Box 758155
Fairbanks, AK 99775-8155

Juneau District ..... (907) 465-8749
1108 "F" Street, Suite 130 fax 465-8742
Juneau, AK 99801

Ketchikan District ..... (907) 225-3290
2030 Sea Level Drive, Suite 210A fax 247-3200
Ketchikan, AK 99901

Nome—Northwest District ..... (907) 443-2320
Box 400—Northwest Campus fax 443-2150
Nome, AK 99762

Palmer—Copper River/Mat-Su District ... (907) 745-3361
809 South Chugach Street, Suite # 2 fax 745-5479
Palmer, AK 99645

Palmer State Office ..... (907) 746-9459
533 E. Fireweed Avenue fax 746-2677
Palmer, AK 99645

Soldotna—Kenai Peninsula District ..... (907) 262-5824
43961 K-Beach Road, Suite A fax 262-3939
Soldotna, AK 99669-9728

Tanana Chiefs Conference 1-800-478-6822
122 1st Avenue phone (907) 452-8251 ext 3248
Fairbanks, AK 99701 fax 459-3936

If you are located in the city of
Sitka call ..... (907) 747-6065

If you are in the following areas:
Aleutians, Kodiak, Sitka, or Southern Southeast
call toll free 1-877-4UA-FACE (1-877-482-3223)

Hotlines

Energy & Building 1-800-478-8324
Food Safety & Preservation 1-888-823-3663

Visit the Alaska Cooperative Extension Web site at
www.uaf.edu/coop-ext

USGS
science for a changing world

Arsenic in Ground-Water Resources of the United States

Arsenic is a naturally occurring element in rocks, soils, and the waters in contact with them. Recognized as a toxic element for centuries, arsenic today also is a human health concern because it can contribute to skin, bladder, and other cancers (National Research Council, 1999). Recently, the National Research Council (1999) recommended lowering the current maximum contaminant level (MCL) allowed for arsenic in drinking water of 50 µg/L (micrograms per liter), citing risks for developing bladder and other cancers. The U.S. Environmental Protection Agency (USEPA) will propose a new, and likely lower, arsenic MCL during 2000 (U.S. Environmental Protection Agency, 2000). This fact sheet provides information on where and to what extent natural concentrations of arsenic in ground water exceed possible new standards.

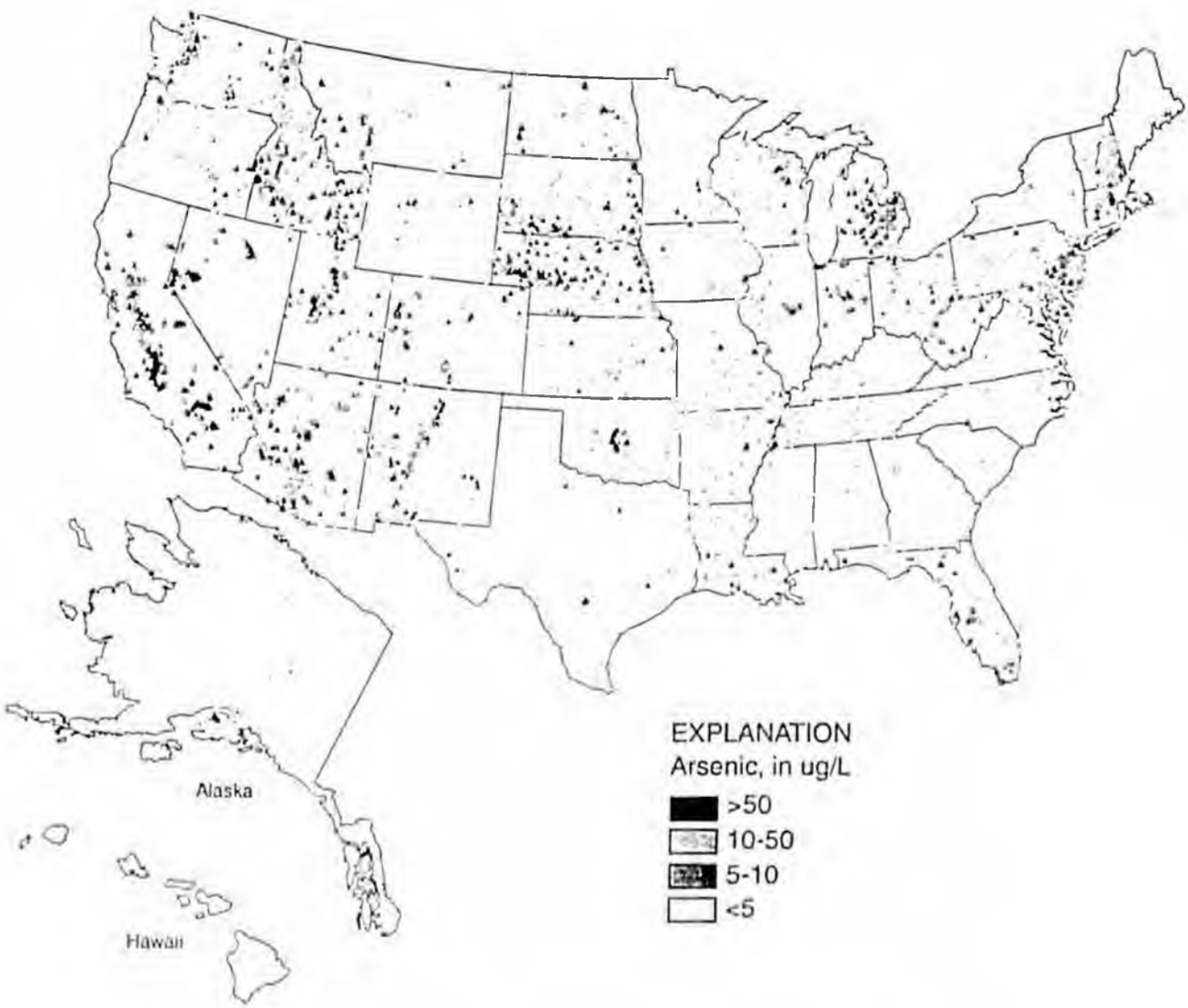

Figure 1. *Arsenic concentrations in ground water of the United States.*

U.S. Department of the Interior
U.S. Geological Survey

Fact Sheet FS-063-00
May 2000

The U.S. Geological Survey (USGS) has collected and analyzed arsenic in potable (drinkable) water from 18,850 wells in 595 counties across the United States during the past two decades. These wells are used for irrigation, industrial purposes, and research, as well as for public and private water supply. Arsenic concentrations in samples from these wells are similar to those found in nearby public supplies (see Focazio and others, 1999). The large number of samples, broad geographic coverage, and consistency of methods produce a more accurate and detailed picture of arsenic concentrations than provided by any previous studies.

Where do high concentrations of arsenic in ground water occur in the United States?

Arsenic concentrations in ground water generally are highest in the West. Parts of the Midwest and Northeast also have arsenic concentrations that exceed 10 µg/L, the World Health Organization's (WHO) provisional guideline for arsenic in drinking water (World Health Organization, 1999). Arsenic concentrations appear to be lower in the Southeast, based on a smaller amount of data. Arsenic concentrations also could be high at locations not shown on figure 1 because data are not available everywhere. Even at sampled locations, concentrations might differ between shallow and deep waters. Nonetheless, these data illustrate how arsenic concentrations vary across broad regions of the country.

How frequently are arsenic concentrations in ground water likely to exceed possible new maximum contaminant levels?

To look at the Nation as a whole, arsenic data were grouped by county and linked to the number of public-supply systems withdrawing ground water in each county (Focazio and others, 1999). Estimates of the percentage of small public water-supply systems which exceed six targeted arsenic concentrations in their ground-water resource are shown in figure 2. Systems were called "small" if they served between 1,000 and 10,000 persons. Focazio and others (1999) provide similar information for both smaller and larger sized systems. The highest concentration evaluated is at the current MCL of 50 µg/L, along with several lower concentrations, one of which may become the new MCL.

As the concentration for a possible new MCL decreases, the likelihood of exceeding that standard increases. Just over 13 percent of small systems used water with arsenic concentrations greater than 5 µg/L, compared to fewer than 1 percent exceeding the current 50 µg/L MCL. Public systems exceeding a new, lower MCL will be required to either treat their water or find alternative sources of supply. This choice undoubtedly will increase costs for consumers while decreasing their exposure to arsenic. Although homeowners with private wells are not regulated, a lower drinking-water standard would mean that more homeowners will be consuming water with concentrations that exceed a standard.

USGS information provides a broad picture of arsenic concentrations in ground water throughout the United States. In 24 percent of the U.S. counties where data were available, at least 10 percent of samples had arsenic concentrations exceeding 10 µg/L, the WHO provisional guideline for arsenic. Water users in these counties (colored darkest brown in fig. 3) are the most likely to have ground water exceeding new standards for arsenic.

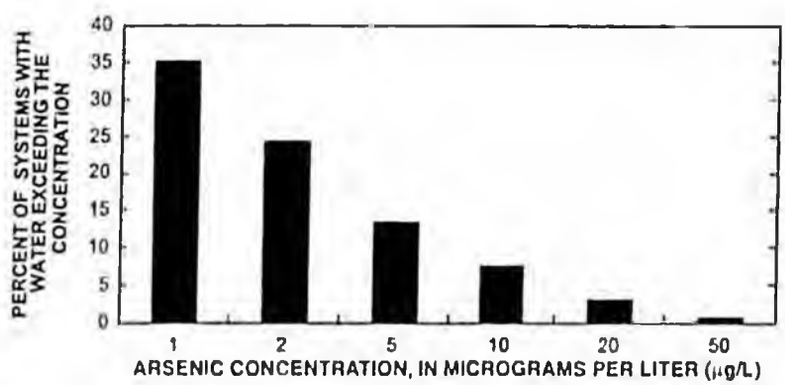

Figure 2. Percentage of small public water-supply systems estimated to exceed targeted arsenic concentrations in their ground-water resource (µg/L, micrograms per liter).

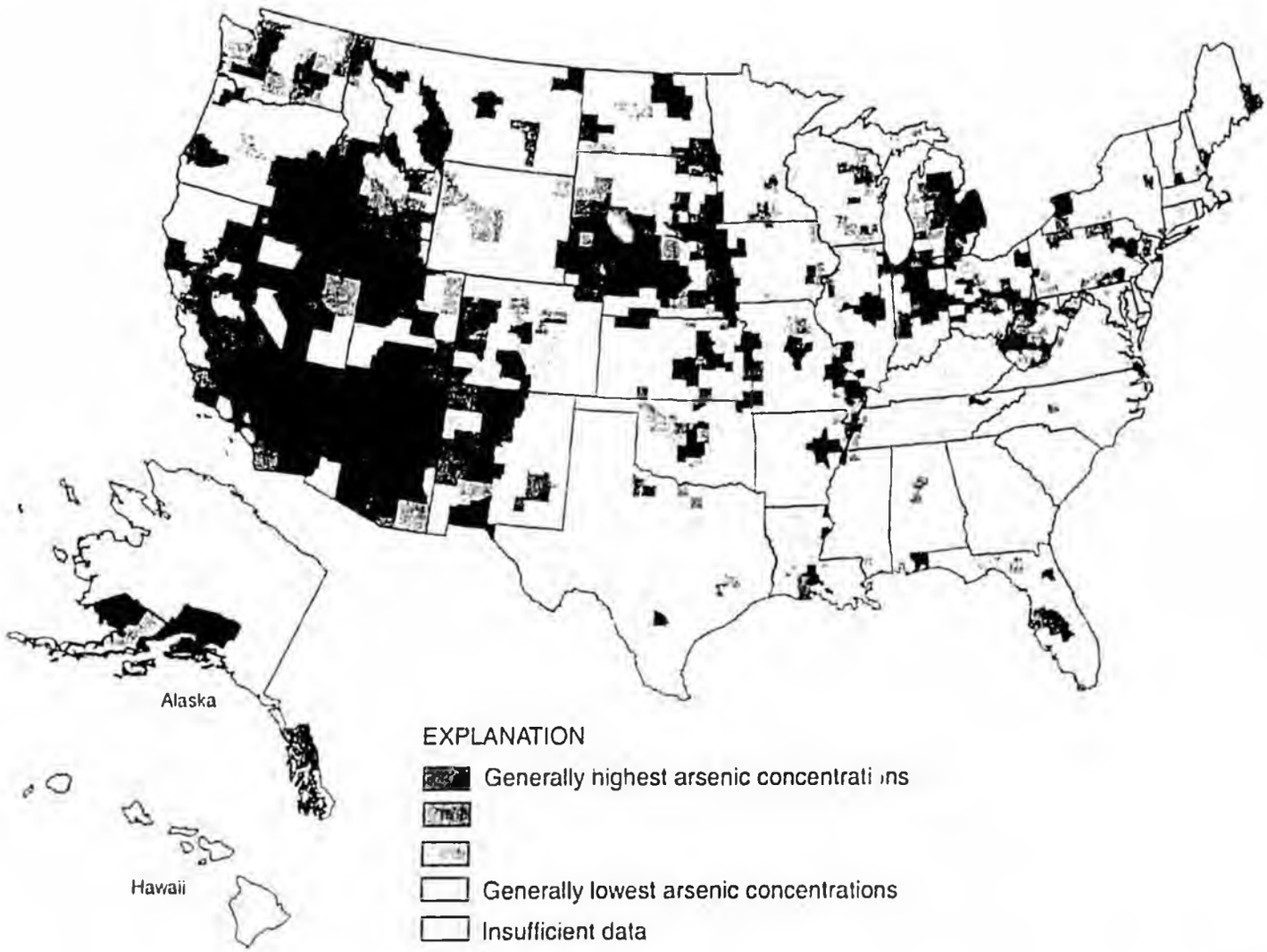

Figure 3. *Counties with arsenic concentrations exceeding possible new MCLs in 10 percent or more of ground-water samples.*

Counties with arsenic concentrations exceeding 10 µg/L in 10 percent or more of samples.

Counties with arsenic concentrations exceeding 5 µg/L in 10 percent or more of samples.

Counties with arsenic concentrations exceeding 3 µg/L in 10 percent or more of samples.

Counties with fewer than 10 percent of samples exceeding 3 µg/L, representing areas of lowest concentration.

Counties with insufficient data in the USGS data base to make estimates.

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HEALTH

Drinking Water Quality and Health no. 9.307

by P. Kendall [1]

Quick Facts...

Water is our most essential nutrient.

Water contains different amounts of dissolved inorganic and organic compounds.

The Environmental Protection Agency regulates public water systems.

The Colorado Department of Health regulates bottled or vended water if the water does not leave Colorado. The Food and Drug Administration regulates if the water is involved in interstate commerce.

People can survive days, weeks or months without food, but only about four days without water. The body uses water for digestion, absorption, circulation, transporting nutrients, building tissues, carrying away waste and maintaining body temperature.

The average adult consumes and excretes about 10 cups of water daily. Adults should drink six to eight cups of liquids per day. Although most of this liquid should come from beverages, food supplies some water. Our bodies make water as a by-product in the breakdown of fats, sugars and proteins to energy.

Water is always two parts hydrogen to one part oxygen. Beyond that, its composition depends on where it comes from, how it is processed and handled. Water can be hard or soft, natural or modified, bottled or tap, carbonated or still. About one-half of our water comes from underground water tables (groundwater) and one-half from surface water in rivers, lakes and reservoirs.

Hard vs. Soft Water

The hardness of water relates to the amount of calcium, magnesium and sometimes iron in the water. The more minerals present, the harder the water. Soft water may contain sodium and other minerals or chemicals; however, it contains very little calcium, magnesium or iron. Many people prefer soft water because it makes soap lather better, gets clothes cleaner and leaves less of a ring around the tub. Some municipalities and individuals remove calcium and magnesium, both essential nutrients, and add sodium in an ion-exchange process to soften their water. The harder the water, the more sodium that must be added in exchange for calcium and magnesium ions to soften the water. This process has drawbacks from a nutritional standpoint.

First, soft water is more likely to dissolve certain metals from pipes than hard water. These metals include cadmium and lead, which are potentially toxic. Second, soft water may be a significant source of sodium for those who need to restrict their sodium intake for health reasons. Approximately 75 milligrams of sodium is added to each quart of water per 10 g.p.g. (grains per gallon) hardness. Finally, there is epidemiological evidence to suggest a lower incidence of heart disease in communities with hard water. The Environmental Protection Agency (EPA) doesn't set a mandatory upper limit for sodium in water, but suggests an upper limit of 20 milligrams per liter (quart) to protect individuals on sodium-restricted diets.

If you use a water softener, two ways to avoid excess sodium in drinking water are: 1) use low sodium bottled water, and 2) install a separate faucet in the kitchen for unsoftened water.

Colorado State University Cooperative Extension

Giardia and Other Microorganisms

Along with differences in mineral composition, water contains different levels of microorganisms. Bacteriological tests are available to determine if water is bacteriologically safe for human consumption. Contact the county health department for information on how and where such tests are performed.

Chlorination and filtration are effective controls for most bacteria. However, a tiny one-celled parasite not readily killed by chlorination, *Giardia lamblia*, deserves special discussion. Over the past several years, giardia has become an increasingly common problem in rural and mountain communities with inadequate filtration systems. Giardia is mostly found in surface waters such as mountain streams and lakes, not groundwater. Because one cannot see, taste, or smell giardia, it is best not to drink water directly from mountain streams or lakes.

Once ingested, the giardia cyst develops into a trophozoite that attaches to the wall of the small intestine. Disease symptoms usually include diarrhea with cramping and gas, dehydration, weakness and loss of appetite. Symptoms may take seven to 10 days to appear and last up to six weeks. Most people are unaware at the time of ingestion that they have been infected.

Laboratory identification can confirm the disease by diagnosis of the organism in the stool. The disease is curable with prescribed medication. If untreated, the symptoms may disappear on their own and reoccur intermittently over a period of months.

Treatment also can help prevent spread of the disease between people and between pets and people. For example, in a Colorado Department of Health study person-to-person contacts within families or between small children in day care centers were responsible for 46 percent of the 360 cases investigated. In fact, only 15 percent of the respondents had ingested stream or lake water in the three weeks prior to the onset of symptoms.

Prevention is the best solution. Always wash your hands after changing diapers and performing other hygiene activities. Wash children's hands frequently. Thoroughly clean change surfaces after diapering.

It's best to carry your own water on camping or backpacking trips. If this is not practical, the next best solution is to boil the water. Although giardia cysts are killed at temperatures of 131 degrees F, boiling for one minute at sea level and up to five minutes at 10,000 feet is recommended to eliminate other microorganisms that might be more heat resistant than giardia. Giardia also will not survive in water held at 59 degrees F for 30 minutes if one iodine tablet has been added per quart. Filters are available, but are expensive and inconvenient. Furthermore, many products marketed for backpackers are not effective in filtering out the tiny giardia cysts.

Protection is the key to the control of giardiasis. Since feces can contain the organism, bury waste 8 inches deep and at least 100 feet away from natural waters. Dogs, like people, can get infected with giardia. Unless carefully controlled, dogs can contaminate the water and continue the chain of infection from animals to humans.

Fluoride

Fluoride is found naturally in Colorado water supplies in different amounts. The dental benefits of fluoridated water are well documented. Fluoride concentrations of 1.0 milligrams per liter or greater will reduce the incidence of dental cavities. However, concentrations over 2.0 milligrams per liter can darken tooth enamel causing fluorosis.

The American Dental Association and the American Medical Association endorse fluoridation. Yet, after more than 40 years of fluoridation, nearly 40 percent of tap water remains unfluoridated. Opponents have long argued that

fluoridation violates individual rights, certain religious beliefs that ban medications, and does not prevent tooth decay. They also claim it promotes a variety of ills. A recent study in which male (but not female) rats given water with high levels of sodium fluoride developed a rare bone cancer, added fuel to their concerns. Proponents counter that fluoridation is not a form of medication, but an adjustment of an essential nutrient to a level favorable to health. What that level is and whether or not it should come from fluoridated drinking water will be at the crux of the next round of debates.

Tooth decay is on the decline in the United States (50 percent decline in the last 20 years). The decline is occuring in fluoridated and to a lesser extent in non-fluoridated areas. Fluoride treatments, fluoridated toothpaste, better diets and improved oral hygiene are all factors.

Like most elements, fluoride appears to be both beneficial to health and potentially toxic. The goal is to determine the optimum level and then decide how best to achieve that level. The EPA currently sets the maximum allowable level of sodium fluoride in drinking water (natural or added) at 4 milligrams per liter (4 parts per million) and the maximum recommended level at 2 milligrams per liter. The EPA reviews drinking water standards every three years.

Lead

Lead is a toxic heavy metal known to turn up in drinking water. Recent data indicate that levels formerly safe may threaten health, especially among infants and children. In an 1986 EPA survey, an estimated 40 million Americans (one in five) were using drinking water that contained potentially hazardous levels of lead.

Acute lead poisoning can cause severe brain damage and death. The effects of chronic, low-level exposure, however, are more subtle. The developing nervous systems of fetuses, infants, and children are particularly vulnerable. Recent studies show that lead exposure at a young age can cause permanent learning disabilities and hyperactive behavior. Low-level lead exposure also is associated with elevated blood pressure, chronic anemia, and peripheral nerve damage.

Natural water usually contains very little lead. Contamination generally occurs in the water distribution system or in the pipes of a home or facility. Lead pipes, brass faucets and lead solder used to join copper pipes are the culprits. If your home was built before 1986 when a nation-wide ban on lead pipes and lead solder went into effect, it is likely to have lead-soldered plumbing.

The severity of lead contamination depends in part on how "corrosive" your water is. Soft or acidic water is more likely to corrode plumbing and fixtures, leaching out lead. According to the EPA, about 80 percent of public water utilities deliver water that is moderately or highly corrosive.

The EPA is changing the focus of its lead regulation from a maximum contaminant level of 50 parts-per-billion at the tap to imposed treatment if more than 10 percent of collected samples from a water system exceed 15 parts-per-billion lead. Water systems that exceed such levels will be required to implement corrosion control measures to reduce leaching of lead into water. Techniques such as adding lime (calcium oxide) to reduce water acidity can greatly reduce lead levels at the tap. A number of other simple practices also can help reduce the level of lead at the tap.

1. Cook with and drink only cold water. Hot water tends to dissolve more lead from pipes.
2. Don't drink the first water out of your tap in the morning. Let the water run for about one minute until a change in temperature occurs.
3. For private wells, consider water treatment devices such as calcite filters that reduce acidity and make water less corrosive. Certain

point-of-purchase treatment devices (e.g., some ion-exchange filters, reverse osmosis devices and distillation units) also can remove lead.

4. If lead levels remain high, consider bottled water for drinking and cooking purposes.

Nitrate

Nitrates may be found naturally in water or may enter water supplies through a number of sources (fertilizers, animal wastes, septic systems). High nitrate-containing water is a serious health concern for pregnant women and infants under the age of 6 months. Bacteria in the infants' digestive tracts may convert the relatively harmless nitrate to nitrite. In turn, the nitrite combines with some of the hemoglobin in blood to form methemoglobin that cannot transport oxygen. To protect those at risk, the Maximum Contaminant Level (MCL) for nitrate in water is 45 mg/l as nitrate (NO_3) or 10 mg/l as nitrogen (N). The MCL for nitrite is 1 mg/l.

Sulfate

Sulfates occur naturally in groundwater combined with calcium, magnesium and sodium as sulfate salts. Sulfate content in excess of 250 to 500 ppm (mg/l) may give water a bitter taste and have a laxative effect on individuals not adapted to the water.

Water that smells like rotten eggs has a high level of hydrogen sulfide gas. The gas may occur naturally in water near oil or gas fields or as the result of bacterial contamination. To test for bacterial contamination contact the county health department or a commercial testing lab.

Organic Chemicals

The term "organic chemical" includes such products as pesticides, herbicides, petroleum products and industrial solvents. Although most have not been routinely monitored, hundreds of different organic chemicals have been found in drinking water from accidental spills, improper disposal or non-point movement through soils to groundwater. Today, municipalities are required to monitor an increasing list of organic chemicals under the Safe-Drinking-Water Act.

As with other contaminants, the danger from organic chemicals in water is hard to assess. In high doses and pure form some of these chemicals may promote cancer, impair the nervous system or damage the heart. In low doses, organic chemicals may have cumulative effects, but so far not much is known about their nature or magnitude.

Once groundwater is contaminated, cleanup of that groundwater is extremely difficult. If the water is unsuitable for human use, it also may be unsuitable for agricultural uses and alternative sources of water may need to be found. Organic chemicals and groundwater contamination is an area where much research is needed. In the meantime, the prudent use and disposal of all chemicals (agricultural, industrial, home and garden) can go a long way to protect the environment and groundwater from contamination.

Radon

Radon is a radioactive gas, a decay product of uranium, that can dissolve into water supplies. The gas also is found in rocks and soils that contain granite, shale, phosphate, and pitchblende. It is odorless, colorless and tasteless.

The EPA considers radon to be a major potential health threat, causing an estimated 10,000 to 40,000 lung-cancer deaths each year. While most deaths are from radon accumulated in houses from seepage through cracks and holes in

the foundation, 30 to 1,800 deaths per year are attributed to radon from household water. Showering, dish-washing and laundering agitate water and release radon into the air.

The EPA estimates that at least 8 million people may have high radon levels in their water supply. Radon is most likely to be present in water from private wells or from small community systems. Large systems usually provide some kind of water treatment that aerates the water and disperses any radon gas that may be present.

Before you test your water for radon, test the air. If your indoor radon level is high and you use groundwater, test your water. If the air level is low, there is no need to test your water. Test results are expressed in picocuries of radon per liter of water (pCi/l). In general 10,000 pCi/l of radon in water contributes roughly 1 pCi/l of airborne radon throughout the house. EPA currently advises consumers to take action at total household air levels of 4 pCi/l. For waterborne radon, a simple step is to make sure your bathroom, laundry and kitchen are well ventilated. At moderate levels, this may adequately reduce your exposure to waterborne radon. However if you use a private well that has high levels of radon, water treatment devices such as granular activated carbon units and home aerators may be warranted.

Bottled vs Tap Water

Sales of bottled water have increased dramatically over the last few years. Bottled-water companies and public water systems often battle over the relative merits of their products. EPA regulates public water systems. FDA regulates bottled water that crosses state lines. Bottled or vended water that stays in Colorado falls under the jurisdiction of the Colorado State Department of Health.

Public water systems generally are disinfected with chlorine. Bottled water is commonly disinfected by ozone treatment. Ozone is a high-strength oxygen that quickly reverts to normal oxygen. It is a strong oxidant, like chlorine, but does not add taste like chlorine does. The length of time chlorine and ozone remain active in water depends on many factors, including temperature. Chlorine usually provides residual disinfection throughout the public-water distribution system. Ozone provides a residual disinfection for a limited time. However, bottled water may be in distribution for several weeks and storage conditions, especially temperature, may adversely affect quality. In terms of bacterial content, it is questionable as to whether bottled water is better than most municipal tap water.

Bottled water often is purchased for its good taste. However, taste does not always indicate safeness. At the concentrations present in drinking water, most harmful substances (including some disease-causing microorganisms, nitrates, trace amounts of lead and mercury, and some pesticides and organic materials) have no taste. Differences in taste among bottled waters generally are due to differing amounts of carbon dioxide, calcium, iron compounds, sodium, and other minerals and mineral salts. Differences also may be due to the amount and type of processing.

Mineral-free water or distilled water is treated to remove the minerals that occur naturally in water. Almost all sodium is removed by these processes. The resulting water is rather flat and tasteless for drinking because of the lack of minerals.

Drinking water comes from municipal water systems, wells or springs. It often is treated by reverse osmosis to remove bacteria and other pathogens and most pesticides. The resulting water is purified but still contains some dissolved solids.

Natural water comes from unprotected well or spring systems and is bottled without extensive treatment. Because it is almost exclusively groundwater, it usually contains a range of minerals and is, therefore, quite flavorful. **Spring water** is ground water that has risen naturally to the surface. **Artesian spring water** also rises under its own pressure, but only after it has been reached by drilling.

Mineral water is simply water that contains minerals - which is true of virtually all water except distilled water. **Natural mineral water** contains just the minerals present in the water as it comes from the ground. Mineral water can be still or sparkling. The carbon dioxide that causes carbonation also can be natural or added during bottling.

As for contaminants, bottled water generally rates as good as but no better than municipal water supplies used for comparison purposes. If you do purchase bottled or vended water, purchase from a quality retailer who handles enough volume to rotate stock. If you have concerns about locally vended water, contact your county health department or the Colorado Department of Health, (303) 692-2000.

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