

US EPA ARCHIVE DOCUMENT

90th Percentile Risks from Application of Fertilizer Products  
Vanadium (Child)

Climate Region	Product	Soil Ingestion	Fruit Ingestion	Vegetable Ingestion	Below-ground Vegetable Ingestion	Beef Ingestion	Milk Ingestion	Fish Ingestion	Direct Inhalation	All Indirect Pathways Combined <sup>1</sup>
Seattle, WA	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00003	0	NA	0.00004
	Gypsum Products	0.00500	0.00007	0.00020	0	0.00300	0.00700	0	NA	0.01027
	Iron	NA	NA	NA	NA	NA	NA	0	NA	NA
	Liming Materials	0.02000	0.00020	0.00060	0	0.00700	0.03000	0	NA	0.03780
	Micronutrients	0.00002	0.00000	0.00000	0	0.00001	0.00003	0	NA	0.00004
	Mn	0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
	NPK as N	0.00600	0.00009	0.00020	0	0.00300	0.01000	0	NA	0.01329
	NPK for P2O5	0.00300	0.00004	0.00010	0	0.00100	0.00400	0	NA	0.00514
	P2O5 - 1	0.00300	0.00004	0.00010	0	0.00200	0.00500	0	NA	0.00714
	Potash	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	S as Nutrient	0.00100	0.00001	0.00005	0	0.00060	0.00200	0	NA	0.00266
	S as Ph	NA	NA	NA	NA	NA	NA	0	NA	NA
	Zinc	0.00004	0.00000	0.00000	0	0.00003	0.00008	0	NA	0.00011
	Albuquerque, NM	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA
Gypsum Products		0.00500	0.00003	0.00007	0	0.00200	0.00600	0	NA	0.00810
Iron		NA	NA	NA	NA	NA	NA	0	NA	NA
Liming Materials		0.02000	0.00007	0.00020	0	0.00700	0.03000	0	NA	0.03727
Micronutrients		0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
Mn		0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
NPK as N		0.00700	0.00003	0.00009	0	0.00300	0.00810	0	NA	0.01122
NPK for P2O5		0.00300	0.00001	0.00004	0	0.00100	0.00300	0	NA	0.00405
P2O5 - 1		0.00400	0.00002	0.00004	0	0.00200	0.00400	0	NA	0.00606
Potash		0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
S as Nutrient		0.00100	0.00001	0.00002	0	0.00060	0.00200	0	NA	0.00263
S as Ph		NA	NA	NA	NA	NA	NA	0	NA	NA
Zinc		0.00005	0.00000	0.00000	0	0.00002	0.00007	0	NA	0.00009
Atlanta, GA		Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA
	Gypsum Products	0.00500	0.00006	0.00010	0	0.00200	0.00700	0	NA	0.00916
	Iron	NA	NA	NA	NA	NA	NA	0	NA	NA
	Liming Materials	0.02000	0.00010	0.00040	0	0.00700	0.03000	0	NA	0.03750
	Micronutrients	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	Mn	0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
	NPK as N	0.00600	0.00007	0.00020	0	0.00300	0.00900	0	NA	0.01227
	NPK for P2O5	0.00300	0.00003	0.00008	0	0.00100	0.00300	0	NA	0.00411
	P2O5 - 1	0.00300	0.00003	0.00009	0	0.00110	0.00410	0	NA	0.00532
	Potash	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	S as Nutrient	0.00100	0.00001	0.00004	0	0.00060	0.00200	0	NA	0.00265
	S as Ph	NA	NA	NA	NA	NA	NA	0	NA	NA
	Zinc	0.00004	0.00000	0.00000	0	0.00002	0.00007	0	NA	0.00009

90th Percentile Risks from Application of Fertilizer Products  
Vanadium (Child)

Climate Region	Product	Soil Ingestion	Fruit Ingestion	Vegetable Ingestion	Below-ground Vegetable Ingestion	Beef Ingestion	Milk Ingestion	Fish Ingestion	Direct Inhalation	All Indirect Pathways Combined <sup>1</sup>
Bismarck, ND	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	Gypsum Products	0.00500	0.00001	0.00003	0	0.00200	0.00600	0	NA	0.00804
	Iron	NA	NA	NA	NA	NA	NA	0	NA	NA
	Liming Materials	0.02000	0.00003	0.00009	0	0.00600	0.02000	0	NA	0.02612
	Micronutrients	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	Mn	0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
	NPK as N	0.00600	0.00002	0.00004	0	0.00300	0.00800	0	NA	0.01106
	NPK for P2O5	0.00300	0.00001	0.00002	0	0.00100	0.00300	0	NA	0.00403
	P2O5 - 1	0.00300	0.00001	0.00002	0	0.00100	0.00400	0	NA	0.00503
	Potash	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	S as Nutrient	0.00100	0.00000	0.00001	0	0.00060	0.00200	0	NA	0.00261
	S as Ph	NA	NA	NA	NA	NA	NA	0	NA	NA
	Zinc	0.00005	0.00000	0.00000	0	0.00002	0.00006	0	NA	0.00008
	Boise, ID	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA
Gypsum Products		0.00500	0.00004	0.00010	0	0.00210	0.00700	0	NA	0.00924
Iron		NA	NA	NA	NA	NA	NA	0	NA	NA
Liming Materials		0.02000	0.00010	0.00030	0	0.00700	0.03000	0	NA	0.03740
Micronutrients		0.00002	0.00000	0.00000	0	0.00001	0.00003	0	NA	0.00004
Mn		0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
NPK as N		0.00700	0.00005	0.00010	0	0.00300	0.00900	0	NA	0.01215
NPK for P2O5		0.00300	0.00002	0.00005	0	0.00100	0.00300	0	NA	0.00407
P2O5 - 1		0.00400	0.00002	0.00006	0	0.00200	0.00500	0	NA	0.00708
Potash		0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
S as Nutrient		0.00100	0.00001	0.00003	0	0.00060	0.00200	0	NA	0.00264
S as Ph		NA	NA	NA	NA	NA	NA	0	NA	NA
Zinc		0.00005	0.00000	0.00000	0	0.00002	0.00008	0	NA	0.00010
Boulder, CO		Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA
	Gypsum Products	0.00500	0.00004	0.00010	0	0.00300	0.00700	0	NA	0.01014
	Iron	NA	NA	NA	NA	NA	NA	0	NA	NA
	Liming Materials	0.02000	0.00010	0.00031	0	0.00700	0.03000	0	NA	0.03741
	Micronutrients	0.00002	0.00000	0.00000	0	0.00001	0.00003	0	NA	0.00004
	Mn	0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
	NPK as N	0.00700	0.00005	0.00010	0	0.00300	0.00900	0	NA	0.01215
	NPK for P2O5	0.00300	0.00002	0.00006	0	0.00100	0.00300	0	NA	0.00408
	P2O5 - 1	0.00400	0.00003	0.00007	0	0.00200	0.00500	0	NA	0.00710
	Potash	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	S as Nutrient	0.00100	0.00001	0.00003	0	0.00060	0.00200	0	NA	0.00264
	S as Ph	NA	NA	NA	NA	NA	NA	0	NA	NA
	Zinc	0.00005	0.00000	0.00000	0	0.00002	0.00007	0	NA	0.00009

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Climate Region	Product	Soil Ingestion	Fruit Ingestion	Vegetable Ingestion	Below-ground Vegetable Ingestion	Beef Ingestion	Milk Ingestion	Fish Ingestion	Direct Inhalation	All Indirect Pathways Combined <sup>1</sup>
Casper, WY	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	Gypsum Products	0.00500	0.00001	0.00003	0	0.00200	0.00600	0	NA	0.00804
	Iron	NA	NA	NA	NA	NA	NA	0	NA	NA
	Liming Materials	0.02000	0.00003	0.00010	0	0.00600	0.02000	0	NA	0.02613
	Micronutrients	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	Mn	0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
	NPK as N	0.00600	0.00002	0.00004	0	0.00300	0.00800	0	NA	0.01106
	NPK for P2O5	0.00300	0.00001	0.00002	0	0.00100	0.00300	0	NA	0.00403
	P2O5 - 1	0.00300	0.00001	0.00002	0	0.00100	0.00400	0	NA	0.00503
	Potash	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	S as Nutrient	0.00100	0.00000	0.00001	0	0.00060	0.00200	0	NA	0.00261
	S as Ph	NA	NA	NA	NA	NA	NA	0	NA	NA
	Zinc	0.00005	0.00000	0.00000	0	0.00002	0.00006	0	NA	0.00008
	Charleston, SC	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA
Gypsum Products		0.00500	0.00004	0.00010	0	0.00200	0.00600	0	NA	0.00814
Iron		NA	NA	NA	NA	NA	NA	0	NA	NA
Liming Materials		0.02000	0.00010	0.00030	0	0.00600	0.03000	0	NA	0.03640
Micronutrients		0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
Mn		0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
NPK as N		0.00600	0.00005	0.00010	0	0.00300	0.00800	0	NA	0.01115
NPK for P2O5		0.00300	0.00002	0.00005	0	0.00100	0.00300	0	NA	0.00407
P2O5 - 1		0.00300	0.00002	0.00007	0	0.00100	0.00400	0	NA	0.00509
Potash		0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
S as Nutrient		0.00100	0.00001	0.00003	0	0.00051	0.00200	0	NA	0.00255
S as Ph		NA	NA	NA	NA	NA	NA	0	NA	NA
Zinc		0.00004	0.00000	0.00000	0	0.00002	0.00007	0	NA	0.00009
Chicago, IL		Boron	0.00002	0.00000	0.00000	0	0.00001	0.00003	0	NA
	Gypsum Products	0.00500	0.00008	0.00020	0	0.00300	0.00800	0	NA	0.01128
	Iron	NA	NA	NA	NA	NA	NA	0	NA	NA
	Liming Materials	0.02000	0.00020	0.00060	0	0.00800	0.03000	0	NA	0.03880
	Micronutrients	0.00002	0.00000	0.00000	0	0.00001	0.00003	0	NA	0.00004
	Mn	0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
	NPK as N	0.00600	0.00010	0.00021	0	0.00310	0.01000	0	NA	0.01341
	NPK for P2O5	0.00300	0.00003	0.00010	0	0.00100	0.00400	0	NA	0.00513
	P2O5 - 1	0.00300	0.00005	0.00010	0	0.00200	0.00500	0	NA	0.00715
	Potash	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	S as Nutrient	0.00100	0.00002	0.00005	0	0.00060	0.00200	0	NA	0.00267
	S as Ph	NA	NA	NA	NA	NA	NA	0	NA	NA
	Zinc	0.00005	0.00000	0.00000	0	0.00003	0.00008	0	NA	0.00011

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Vanadium (Child)

Climate Region	Product	Soil Ingestion	Fruit Ingestion	Vegetable Ingestion	Below-ground Vegetable Ingestion	Beef Ingestion	Milk Ingestion	Fish Ingestion	Direct Inhalation	All Indirect Pathways Combined <sup>1</sup>
Cleveland, OH	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00003	0	NA	0.00004
	Gypsum Products	0.00500	0.00008	0.00020	0	0.00300	0.00710	0	NA	0.01038
	Iron	NA	NA	NA	NA	NA	NA	0	NA	NA
	Liming Materials	0.02000	0.00020	0.00060	0	0.00800	0.03000	0	NA	0.03880
	Micronutrients	0.00002	0.00000	0.00000	0	0.00001	0.00003	0	NA	0.00004
	Mn	0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
	NPK as N	0.00600	0.00010	0.00030	0	0.00400	0.01000	0	NA	0.01440
	NPK for P2O5	0.00300	0.00004	0.00010	0	0.00100	0.00400	0	NA	0.00514
	P2O5 - 1	0.00300	0.00005	0.00010	0	0.00200	0.00500	0	NA	0.00715
	Potash	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	S as Nutrient	0.00100	0.00002	0.00006	0	0.00070	0.00200	0	NA	0.00278
	S as Ph	NA	NA	NA	NA	NA	NA	0	NA	NA
	Zinc	0.00005	0.00000	0.00000	0	0.00003	0.00009	0	NA	0.00012
	Fresno, CA	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA
Gypsum Products		0.00500	0.00003	0.00008	0	0.00200	0.00700	0	NA	0.00911
Iron		NA	NA	NA	NA	NA	NA	0	NA	NA
Liming Materials		0.02000	0.00008	0.00021	0	0.00700	0.03000	0	NA	0.03729
Micronutrients		0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
Mn		0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
NPK as N		0.00600	0.00004	0.00010	0	0.00300	0.00900	0	NA	0.01214
NPK for P2O5		0.00300	0.00002	0.00005	0	0.00100	0.00300	0	NA	0.00407
P2O5 - 1		0.00310	0.00002	0.00006	0	0.00200	0.00400	0	NA	0.00608
Potash		0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
S as Nutrient		0.00100	0.00001	0.00002	0	0.00060	0.00200	0	NA	0.00263
S as Ph		NA	NA	NA	NA	NA	NA	0	NA	NA
Zinc		0.00005	0.00000	0.00000	0	0.00002	0.00007	0	NA	0.00009
Grand Island, NE		Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA
	Gypsum Products	0.00500	0.00002	0.00004	0	0.00200	0.00600	0	NA	0.00806
	Iron	NA	NA	NA	NA	NA	NA	0	NA	NA
	Liming Materials	0.02000	0.00004	0.00010	0	0.00600	0.02000	0	NA	0.02614
	Micronutrients	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	Mn	0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
	NPK as N	0.00600	0.00002	0.00006	0	0.00300	0.00800	0	NA	0.01108
	NPK for P2O5	0.00300	0.00001	0.00002	0	0.00100	0.00300	0	NA	0.00403
	P2O5 - 1	0.00400	0.00001	0.00003	0	0.00100	0.00400	0	NA	0.00504
	Potash	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	S as Nutrient	0.00100	0.00000	0.00001	0	0.00060	0.00200	0	NA	0.00261
	S as Ph	NA	NA	NA	NA	NA	NA	0	NA	NA
	Zinc	0.00005	0.00000	0.00000	0	0.00002	0.00007	0	NA	0.00009

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Vanadium (Child)

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Harrisburg, PA	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	Gypsum Products	0.00500	0.00003	0.00008	0	0.00200	0.00600	0	NA	0.00811
	Iron	NA	NA	NA	NA	NA	NA	0	NA	NA
	Liming Materials	0.02000	0.00008	0.00030	0	0.00610	0.02000	0	NA	0.02648
	Micronutrients	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	Mn	0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
	NPK as N	0.00600	0.00004	0.00010	0	0.00300	0.00800	0	NA	0.01114
	NPK for P2O5	0.00300	0.00002	0.00004	0	0.00100	0.00300	0	NA	0.00406
	P2O5 - 1	0.00300	0.00002	0.00005	0	0.00100	0.00400	0	NA	0.00507
	Potash	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	S as Nutrient	0.00100	0.00001	0.00002	0	0.00060	0.00200	0	NA	0.00263
	S as Ph	NA	NA	NA	NA	NA	NA	0	NA	NA
	Zinc	0.00004	0.00000	0.00000	0	0.00002	0.00007	0	NA	0.00009
	Hartford, CT	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA
Gypsum Products		0.00500	0.00003	0.00006	0	0.00200	0.00600	0	NA	0.00809
Iron		NA	NA	NA	NA	NA	NA	0	NA	NA
Liming Materials		0.02000	0.00007	0.00020	0	0.00600	0.02000	0	NA	0.02627
Micronutrients		0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
Mn		0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
NPK as N		0.00600	0.00003	0.00008	0	0.00300	0.00800	0	NA	0.01111
NPK for P2O5		0.00300	0.00001	0.00004	0	0.00100	0.00300	0	NA	0.00405
P2O5 - 1		0.00300	0.00001	0.00004	0	0.00100	0.00400	0	NA	0.00505
Potash		0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
S as Nutrient		0.00100	0.00001	0.00002	0	0.00050	0.00200	0	NA	0.00253
S as Ph		NA	NA	NA	NA	NA	NA	0	NA	NA
Zinc		0.00004	0.00000	0.00000	0	0.00002	0.00006	0	NA	0.00008
Houston, TX		Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA
	Gypsum Products	0.00500	0.00002	0.00005	0	0.00200	0.00600	0	NA	0.00807
	Iron	NA	NA	NA	NA	NA	NA	0	NA	NA
	Liming Materials	0.02000	0.00005	0.00020	0	0.00600	0.02000	0	NA	0.02625
	Micronutrients	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	Mn	0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
	NPK as N	0.00600	0.00002	0.00007	0	0.00300	0.00800	0	NA	0.01109
	NPK for P2O5	0.00300	0.00001	0.00003	0	0.00100	0.00300	0	NA	0.00404
	P2O5 - 1	0.00300	0.00001	0.00004	0	0.00100	0.00400	0	NA	0.00505
	Potash	0.00001	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	S as Nutrient	0.00100	0.00001	0.00001	0	0.00050	0.00200	0	NA	0.00252
	S as Ph	NA	NA	NA	NA	NA	NA	0	NA	NA
	Zinc	0.00004	0.00000	0.00000	0	0.00002	0.00006	0	NA	0.00008

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Vanadium (Child)

Climate Region	Product	Soil Ingestion	Fruit Ingestion	Vegetable Ingestion	Below-ground Vegetable Ingestion	Beef Ingestion	Milk Ingestion	Fish Ingestion	Direct Inhalation	All Indirect Pathways Combined <sup>1</sup>
Huntington, WV	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	Gypsum Products	0.00500	0.00004	0.00010	0	0.00200	0.00700	0	NA	0.00914
	Iron	NA	NA	NA	NA	NA	NA	0	NA	NA
	Liming Materials	0.02000	0.00010	0.00030	0	0.00700	0.03000	0	NA	0.03740
	Micronutrients	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	Mn	0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
	NPK as N	0.00600	0.00005	0.00010	0	0.00300	0.00810	0	NA	0.01125
	NPK for P2O5	0.00300	0.00002	0.00006	0	0.00100	0.00300	0	NA	0.00408
	P2O5 - 1	0.00300	0.00003	0.00007	0	0.00100	0.00400	0	NA	0.00510
	Potash	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	S as Nutrient	0.00100	0.00001	0.00003	0	0.00060	0.00200	0	NA	0.00264
	S as Ph	NA	NA	NA	NA	NA	NA	0	NA	NA
	Zinc	0.00005	0.00000	0.00000	0	0.00002	0.00007	0	NA	0.00009
	Las Vegas, NV	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA
Gypsum Products		0.00500	0.00001	0.00003	0	0.00200	0.00600	0	NA	0.00804
Iron		NA	NA	NA	NA	NA	NA	0	NA	NA
Liming Materials		0.02000	0.00003	0.00010	0	0.00700	0.02000	0	NA	0.02713
Micronutrients		0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
Mn		0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
NPK as N		0.00600	0.00002	0.00004	0	0.00300	0.00800	0	NA	0.01106
NPK for P2O5		0.00300	0.00001	0.00002	0	0.00100	0.00300	0	NA	0.00403
P2O5 - 1		0.00400	0.00001	0.00002	0	0.00100	0.00400	0	NA	0.00503
Potash		0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
S as Nutrient		0.00100	0.00000	0.00001	0	0.00060	0.00200	0	NA	0.00261
S as Ph		NA	NA	NA	NA	NA	NA	0	NA	NA
Zinc		0.00005	0.00000	0.00000	0	0.00002	0.00006	0	NA	0.00008
Los Angeles, CA		Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA
	Gypsum Products	0.00500	0.00004	0.00010	0	0.00200	0.00700	0	NA	0.00914
	Iron	NA	NA	NA	NA	NA	NA	0	NA	NA
	Liming Materials	0.02000	0.00010	0.00030	0	0.00700	0.03000	0	NA	0.03740
	Micronutrients	0.00002	0.00000	0.00000	0	0.00001	0.00003	0	NA	0.00004
	Mn	0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
	NPK as N	0.00600	0.00005	0.00010	0	0.00300	0.00900	0	NA	0.01215
	NPK for P2O5	0.00300	0.00002	0.00006	0	0.00100	0.00300	0	NA	0.00408
	P2O5 - 1	0.00300	0.00002	0.00006	0	0.00200	0.00500	0	NA	0.00708
	Potash	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	S as Nutrient	0.00100	0.00001	0.00003	0	0.00060	0.00200	0	NA	0.00264
	S as Ph	NA	NA	NA	NA	NA	NA	0	NA	NA
	Zinc	0.00005	0.00000	0.00000	0	0.00002	0.00007	0	NA	0.00009

90th Percentile Risks from Application of Fertilizer Products  
Vanadium (Child)

Climate Region	Product	Soil Ingestion	Fruit Ingestion	Vegetable Ingestion	Below-ground Vegetable Ingestion	Beef Ingestion	Milk Ingestion	Fish Ingestion	Direct Inhalation	All Indirect Pathways Combined <sup>1</sup>
Memphis, TN	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	Gypsum Products	0.00500	0.00006	0.00020	0	0.00200	0.00700	0	NA	0.00926
	Iron	NA	NA	NA	NA	NA	NA	0	NA	NA
	Liming Materials	0.02000	0.00020	0.00050	0	0.00700	0.03000	0	NA	0.03770
	Micronutrients	0.00002	0.00000	0.00000	0	0.00001	0.00003	0	NA	0.00004
	Mn	0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
	NPK as N	0.00600	0.00008	0.00020	0	0.00300	0.00900	0	NA	0.01228
	NPK for P2O5	0.00200	0.00003	0.00008	0	0.00100	0.00300	0	NA	0.00411
	P2O5 - 1	0.00300	0.00004	0.00010	0	0.00100	0.00500	0	NA	0.00614
	Potash	0.00001	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	S as Nutrient	0.00100	0.00001	0.00004	0	0.00060	0.00200	0	NA	0.00265
	S as Ph	NA	NA	NA	NA	NA	NA	0	NA	NA
	Zinc	0.00004	0.00000	0.00000	0	0.00002	0.00008	0	NA	0.00010
	Miami, FL	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA
Gypsum Products		0.00400	0.00001	0.00004	0	0.00200	0.00500	0	NA	0.00705
Iron		NA	NA	NA	NA	NA	NA	0	NA	NA
Liming Materials		0.01100	0.00003	0.00008	0	0.00500	0.02000	0	NA	0.02511
Micronutrients		0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
Mn		0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
NPK as N		0.00500	0.00002	0.00005	0	0.00300	0.00600	0	NA	0.00907
NPK for P2O5		0.00200	0.00001	0.00002	0	0.00100	0.00200	0	NA	0.00303
P2O5 - 1		0.00300	0.00001	0.00002	0	0.00100	0.00300	0	NA	0.00403
Potash		0.00001	0.00000	0.00000	0	0.00001	0.00001	0	NA	0.00002
S as Nutrient		0.00100	0.00000	0.00001	0	0.00040	0.00110	0	NA	0.00151
S as Ph		NA	NA	NA	NA	NA	NA	0	NA	NA
Zinc		0.00004	0.00000	0.00000	0	0.00002	0.00005	0	NA	0.00007
Minneapolis, MN		Boron	0.00002	0.00000	0.00000	0	0.00001	0.00003	0	NA
	Gypsum Products	0.00500	0.00007	0.00020	0	0.00300	0.00700	0	NA	0.01027
	Iron	NA	NA	NA	NA	NA	NA	0	NA	NA
	Liming Materials	0.02000	0.00020	0.00050	0	0.00700	0.03000	0	NA	0.03770
	Micronutrients	0.00002	0.00000	0.00000	0	0.00001	0.00003	0	NA	0.00004
	Mn	0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
	NPK as N	0.00600	0.00008	0.00020	0	0.00300	0.01000	0	NA	0.01328
	NPK for P2O5	0.00300	0.00003	0.00008	0	0.00100	0.00400	0	NA	0.00511
	P2O5 - 1	0.00300	0.00004	0.00010	0	0.00200	0.00500	0	NA	0.00714
	Potash	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	S as Nutrient	0.00100	0.00001	0.00004	0	0.00061	0.00200	0	NA	0.00266
	S as Ph	NA	NA	NA	NA	NA	NA	0	NA	NA
	Zinc	0.00005	0.00000	0.00000	0	0.00002	0.00008	0	NA	0.00010



90th Percentile Risks from Application of Fertilizer Products  
Vanadium (Child)

Climate Region	Product	Soil Ingestion	Fruit Ingestion	Vegetable Ingestion	Below-ground Vegetable Ingestion	Beef Ingestion	Milk Ingestion	Fish Ingestion	Direct Inhalation	All Indirect Pathways Combined <sup>1</sup>
Philadelphia, PA	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	Gypsum Products	0.00500	0.00003	0.00007	0	0.00200	0.00600	0	NA	0.00810
	Iron	NA	NA	NA	NA	NA	NA	0	NA	NA
	Liming Materials	0.02000	0.00008	0.00020	0	0.00600	0.02000	0	NA	0.02628
	Micronutrients	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	Mn	0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
	NPK as N	0.00600	0.00004	0.00010	0	0.00300	0.00800	0	NA	0.01114
	NPK for P2O5	0.00300	0.00002	0.00004	0	0.00100	0.00300	0	NA	0.00406
	P2O5 - 1	0.00300	0.00002	0.00005	0	0.00100	0.00400	0	NA	0.00507
	Potash	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	S as Nutrient	0.00100	0.00001	0.00002	0	0.00060	0.00200	0	NA	0.00263
	S as Ph	NA	NA	NA	NA	NA	NA	0	NA	NA
	Zinc	0.00004	0.00000	0.00000	0	0.00002	0.00007	0	NA	0.00009
	Phoenix, AZ	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA
Gypsum Products		0.00500	0.00002	0.00004	0	0.00200	0.00600	0	NA	0.00806
Iron		NA	NA	NA	NA	NA	NA	0	NA	NA
Liming Materials		0.02000	0.00004	0.00010	0	0.00610	0.02000	0	NA	0.02624
Micronutrients		0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
Mn		0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
NPK as N		0.00600	0.00002	0.00006	0	0.00300	0.00800	0	NA	0.01108
NPK for P2O5		0.00300	0.00001	0.00002	0	0.00100	0.00300	0	NA	0.00403
P2O5 - 1		0.00400	0.00001	0.00003	0	0.00100	0.00400	0	NA	0.00504
Potash		0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
S as Nutrient		0.00100	0.00000	0.00001	0	0.00060	0.00200	0	NA	0.00261
S as Ph		NA	NA	NA	NA	NA	NA	0	NA	NA
Zinc		0.00005	0.00000	0.00000	0	0.00002	0.00007	0	NA	0.00009
Portland, ME		Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA
	Gypsum Products	0.00410	0.00005	0.00010	0	0.00200	0.00700	0	NA	0.00915
	Iron	NA	NA	NA	NA	NA	NA	0	NA	NA
	Liming Materials	0.02000	0.00010	0.00040	0	0.00700	0.02000	0	NA	0.02750
	Micronutrients	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	Mn	0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
	NPK as N	0.00510	0.00007	0.00020	0	0.00300	0.00900	0	NA	0.01227
	NPK for P2O5	0.00200	0.00002	0.00007	0	0.00100	0.00300	0	NA	0.00409
	P2O5 - 1	0.00300	0.00003	0.00008	0	0.00100	0.00400	0	NA	0.00511
	Potash	0.00001	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	S as Nutrient	0.00100	0.00001	0.00003	0	0.00051	0.00200	0	NA	0.00255
	S as Ph	NA	NA	NA	NA	NA	NA	0	NA	NA
	Zinc	0.00004	0.00000	0.00000	0	0.00002	0.00007	0	NA	0.00009

90th Percentile Risks from Application of Fertilizer Products  
Vanadium (Child)

Climate Region	Product	Soil Ingestion	Fruit Ingestion	Vegetable Ingestion	Below-ground Vegetable Ingestion	Beef Ingestion	Milk Ingestion	Fish Ingestion	Direct Inhalation	All Indirect Pathways Combined <sup>1</sup>
Raleigh-Durham, NC	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00003	0	NA	0.00004
	Gypsum Products	0.00500	0.00007	0.00020	0	0.00200	0.00700	0	NA	0.00927
	Iron	NA	NA	NA	NA	NA	NA	0	NA	NA
	Liming Materials	0.02000	0.00020	0.00060	0	0.00710	0.03000	0	NA	0.03790
	Micronutrients	0.00002	0.00000	0.00000	0	0.00001	0.00003	0	NA	0.00004
	Mn	0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
	NPK as N	0.00600	0.00009	0.00020	0	0.00300	0.01000	0	NA	0.01329
	NPK for P2O5	0.00300	0.00003	0.00010	0	0.00100	0.00310	0	NA	0.00423
	P2O5 - 1	0.00300	0.00004	0.00010	0	0.00200	0.00500	0	NA	0.00714
	Potash	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	S as Nutrient	0.00100	0.00001	0.00005	0	0.00060	0.00200	0	NA	0.00266
	S as Ph	NA	NA	NA	NA	NA	NA	0	NA	NA
	Zinc	0.00004	0.00000	0.00000	0	0.00002	0.00008	0	NA	0.00010
	Salem, OR	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA
Gypsum Products		0.00500	0.00003	0.00007	0	0.00200	0.00600	0	NA	0.00810
Iron		NA	NA	NA	NA	NA	NA	0	NA	NA
Liming Materials		0.02000	0.00007	0.00020	0	0.00600	0.02000	0	NA	0.02627
Micronutrients		0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
Mn		0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
NPK as N		0.00600	0.00004	0.00009	0	0.00300	0.00800	0	NA	0.01113
NPK for P2O5		0.00300	0.00001	0.00004	0	0.00100	0.00300	0	NA	0.00405
P2O5 - 1		0.00300	0.00002	0.00005	0	0.00100	0.00400	0	NA	0.00507
Potash		0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
S as Nutrient		0.00100	0.00001	0.00002	0	0.00060	0.00200	0	NA	0.00263
S as Ph		NA	NA	NA	NA	NA	NA	0	NA	NA
Zinc		0.00004	0.00000	0.00000	0	0.00002	0.00007	0	NA	0.00009
Salt Lake City, UT		Boron	0.00002	0.00000	0.00000	0	0.00001	0.00003	0	NA
	Gypsum Products	0.00500	0.00005	0.00010	0	0.00210	0.00700	0	NA	0.00925
	Iron	NA	NA	NA	NA	NA	NA	0	NA	NA
	Liming Materials	0.02000	0.00010	0.00040	0	0.00700	0.03000	0	NA	0.03750
	Micronutrients	0.00002	0.00000	0.00000	0	0.00001	0.00003	0	NA	0.00004
	Mn	0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
	NPK as N	0.00600	0.00006	0.00020	0	0.00300	0.01000	0	NA	0.01326
	NPK for P2O5	0.00300	0.00002	0.00007	0	0.00100	0.00300	0	NA	0.00409
	P2O5 - 1	0.00400	0.00003	0.00008	0	0.00200	0.00500	0	NA	0.00711
	Potash	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	S as Nutrient	0.00100	0.00001	0.00003	0	0.00060	0.00200	0	NA	0.00264
	S as Ph	NA	NA	NA	NA	NA	NA	0	NA	NA
	Zinc	0.00005	0.00000	0.00000	0	0.00003	0.00008	0	NA	0.00011

90th Percentile Risks from Application of Fertilizer Products  
Vanadium (Child)

Climate Region	Product	Soil Ingestion	Fruit Ingestion	Vegetable Ingestion	Below-ground Vegetable Ingestion	Beef Ingestion	Milk Ingestion	Fish Ingestion	Direct Inhalation	All Indirect Pathways Combined <sup>1</sup>
San Francisco, CA	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	Gypsum Products	0.00500	0.00003	0.00006	0	0.00200	0.00600	0	NA	0.00809
	Iron	NA	NA	NA	NA	NA	NA	0	NA	NA
	Liming Materials	0.02000	0.00006	0.00020	0	0.00610	0.02000	0	NA	0.02636
	Micronutrients	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	Mn	0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
	NPK as N	0.00600	0.00003	0.00008	0	0.00300	0.00800	0	NA	0.01111
	NPK for P2O5	0.00300	0.00001	0.00004	0	0.00100	0.00300	0	NA	0.00405
	P2O5 - 1	0.00300	0.00002	0.00004	0	0.00100	0.00400	0	NA	0.00506
	Potash	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
	S as Nutrient	0.00100	0.00001	0.00002	0	0.00060	0.00200	0	NA	0.00263
	S as Ph	NA	NA	NA	NA	NA	NA	0	NA	NA
	Zinc	0.00005	0.00000	0.00000	0	0.00002	0.00007	0	NA	0.00009
	Winnemucca, NV	Boron	0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA
Gypsum Products		0.00500	0.00001	0.00002	0	0.00200	0.00600	0	NA	0.00803
Iron		NA	NA	NA	NA	NA	NA	0	NA	NA
Liming Materials		0.02000	0.00002	0.00005	0	0.00600	0.02000	0	NA	0.02607
Micronutrients		0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
Mn		0.00000	0.00000	0.00000	0	0.00000	0.00000	0	NA	0.00000
NPK as N		0.00610	0.00001	0.00002	0	0.00300	0.00800	0	NA	0.01103
NPK for P2O5		0.00300	0.00000	0.00001	0	0.00100	0.00300	0	NA	0.00401
P2O5 - 1		0.00300	0.00000	0.00001	0	0.00100	0.00400	0	NA	0.00501
Potash		0.00002	0.00000	0.00000	0	0.00001	0.00002	0	NA	0.00003
S as Nutrient		0.00100	0.00000	0.00001	0	0.00060	0.00200	0	NA	0.00261
S as Ph		NA	NA	NA	NA	NA	NA	0	NA	NA
Zinc		0.00005	0.00000	0.00000	0	0.00002	0.00006	0	NA	0.00008

<sup>1</sup> All Indirect Pathways Combined includes Fruit, Vegetable, Below-ground Vegetable, Beef, and Milk Ingestion. Numbers less than 0.00001 appear as a default of 0.00000.