Legend:
- The four basic organic elements
- Quantity elements
- Essential trace elements
- Essentiality or function debated

Roles in biological processes

Dietary element	RDA/AI Male/Female (US) [mg][16]	UL (US and EU) [mg][16][17]	Category	High nutrient density dietary sources	Terms for deficiency/excess
Potassium	4700	NE; NE	A systemic electrolyte and is essential in coregulating ATP with sodium	Sweet potato, tomato, potato, beans, lentils, dairy products, seafood, banana, prune, carrot, orange[18]	hypokalemia / hyperkalemia
Chlorine	2300	3600; NE	Needed for production of hydrochloric acid in the stomach, in cellular pump functions and required in host defense	Table salt (sodium chloride) is the main dietary source.	hypochloremia / hyperchloremia
Sodium	1500	2300; NE	A systemic electrolyte and is essential in coregulating ATP with potassium	Table salt (sodium chloride, the main source), sea vegetables, milk, and spinach.	hyponatremia / hypernatremia
Calcium	1000	2500; 2500	Needed for muscle, heart and digestive system health, builds bone (see hydroxyapatite), supports synthesis and function of blood cells, helps in blood clotting	Dairy products, eggs, canned fish with bones (salmon, sardines), green leafy vegetables, nuts, seeds, tofu, thyme, oregano, dill, cinnamon.[19]	hypocalcaemia / hypercalcaemia
Phosphorus	700	4000; 4000	A component of bones (see hydroxyapatite), cells, in energy processing, in DNA and ATP (as phosphate) and many other functions	Red meat, dairy foods, fish, poultry, bread, rice, oats.[20][21] In biological contexts, usually seen as phosphate[22]	hypophosphatemia / hyperphosphatemia
Magnesium	420/320	350; 250	Required for processing ATP and for bones	Spinach, legumes, nuts, seeds, whole grains, peanut	hypomagnesemia (magnesium deficiency) / hypermagnesemia

				butter, avocado[23]	
Iron	8/18	45; NE	Required for many proteins and enzymes, notably hemoglobin to prevent anemia	Meat, seafood, nuts, beans, dark chocolate[24]	iron deficiency / iron overload disorder
Zinc	11/8	40; 25	Required for several classes of enzymes such as matrix metalloproteinases, liver alcohol dehydrogenase, carbonic anhydrase and zinc finger proteins	Oysters*, red meat, poultry, nuts, whole grains, dairy products[25]	zinc deficiency / zinc toxicity
Manganese	2.3/1.8	11; NE	Required co-factor for superoxide dismutase	Grains, legumes, seeds, nuts, leafy vegetables, tea, coffee[26]	manganese deficiency / manganism
Copper	0.9	10; 5	Required co-factor for cytochrome c oxidase	Liver, seafood, oysters, nuts, seeds; some: whole grains, legumes[26]	copper deficiency / copper toxicity
Iodine	0.150	1.1; 0.6	Required for the synthesis of thyroid hormones and to help enzymes in host defense	Seaweed (kelp or kombu)*, grains, eggs, iodized salt[27]	iodine deficiency (goiter) / iodism (hyperthyroidism[28])
Molybdenum	0.045	2; 0.6	Required for the functioning of xanthine oxidase, aldehyde oxidase, and sulfite oxidase[29]	Legumes, whole grains, nuts[26]	molybdenum deficiency / molybdenum toxicity[30]
Selenium	0.055	0.4; 0.3	Essential to activity of antioxidant enzymes like glutathione peroxidase	Brazil nuts, seafoods, organ meats, meats, grains, dairy products, eggs[31]	selenium deficiency / selenosis
Cobalt	none	NE; NE	Cobalt is available for use by animals only after having been processed into complex molecules (e.g., vitamin B_{12}) by bacteria. Humans contain only milligrams of cobalt in these cofactors. A deficiency of cobalt leads to pernicious anemia.	Animal muscle and liver are good dietary sources, also shellfish and crab meat.[32]	pernicious anemia / cobalt poisoning

RDA = Recommended Dietary Allowance; AI= Adequate intake; UL = Tolerable upper intake level; Figures shown are for adults age 31–50, male or female neither pregnant nor lactating