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Acid and base worksheets pdf

A study conducted by the Canadian Dental Association found that toothpaste varied from acidic, neutral, and basic pH levels, depending on the ingredients it contained. The average pH level of the nine toothpastes tested was 6.83 (slightly acidic). They had different pH levels, ranging from 4.22 (acidic) to 8.35 (slightly alkaline or basic). Seven of these were measured at one neutral point (seventh step). Toothpastes containing fluoride, sodium lauryl sulphate, sugar and carbrasive abrasives are more acidic than those without these ingredients. In particular, xylitol has been shown to significantly reduce the acid content of toothpaste. Other ingredients that increase the alkalinity of toothpaste include baking soda, tetrasodium pyrophosphate and sodium carbonate peroxide. In chemistry and cooking, many substances dissolve in water to make it acidic or alkaline. The pH of the stock solution is more than 7, the pH of the acid solution is less than 7. Aqueous solutions with a pH of 7 are considered neutral. The acid-based indicator is either a weak acid or a weak base, the colour of which is changed as a change in the concentration of hydrogen (H+) or hydroxide (OH-) ions in an aqueous solution. Acid-base indicators are most commonly used for titration to determine the endpoint of the acid-base reaction. They are also used to assess pH values and for scientific demonstrations with interesting colour changes. Also known as: pH indicator Perhaps the best known pH indicator is litmus. Thymol Blue, Phenol Red and Methyl Orange are all common acid-key indicators. Red cabbage can also be used as an acid base indicator. If the indicator is weak acid, the acid and its conjugated base have different colors. If the indicator has a weak base, the base and its conjugated acid screen in different colors. For a weak acid indicator with a family formula HIn, the solution is balanced according to the chemical equation: $\text{HIn(aq)} + \text{H}_2\text{O(l)} \rightleftharpoons \text{In}^-(\text{aq}) + \text{H}_3\text{O}^+(\text{aq})$ HIn(aq) is an acid different from base In-(aq). When the pH is low, the concentration of the hydronium ion H3O+ is high and the balance to the left, creating color A. High pH, concentration of H3O+ is low, so that the balance tends towards the right side of the equation and color B is displayed. A weak acid indicator such as phenolphthaleic, which is colourless as a weak acid, but dissociate in water to form a magenta or red purple anion. In the acid solution there is a balance on the left so that the solution is colourless (too little magenta anion can be seen), but as the pH increases the balance changes to the right and the magenta color is visible. The response balance constant can be determined by the following equation: $K_{\text{In}} = \frac{[\text{H}_3\text{O}^+][\text{In}^-]}{[\text{HIn}]}$, where K_{In} is the indicator dissociation constant. Discoloration occurs in the place where and the basis of the anions is equal: $[\text{HIn}] = [\text{In}^-]$, which is the point at which half of the indicator is in acid form and the other half conjugated base. A certain type of acid-base indicator is a universal indicator that is a mixture of several indicators that gradually color changes in a wide pH range. The indicators are selected so that mixing a few drops with the solution creates a colour that can be associated with an approximate pH value. Several plants and household chemicals may be used as PH indicators, but in the laboratory these may be the most common chemicals, used as indicators: Indicator Acid Color Base Color pH Range pKin thymol blue (first change) red yellow 1.2 - 2.8 1.5 methyloran2 red yellow 3.2 - 4.4 3.7 bromocresol green yellow blue 3.8-5.4 4.7 methyl red red red 4.8 - 6.0 6.0 9 5.1 bromomool blue blue 6.0 - 7.6 phenol red red red 6.8- 8.4 7.9 thymol blue (second change) yellow blue 8.0 - 9.6 phenolphthaleic colourless magenta 8.2 -10.0 9.4 acid and the base colors are relative. Also note, some popular indicators display more than one color change from weak acid or weak base to dissociation more than once. Acid-base indicators are chemicals used to determine whether aqueous solution is acidic, neutral or alkaline. Since acidity and alkalinity are associated with pH, they can also be used as pH indicators. Examples of acid-base indicators include litmus paper, phenolphthaleic, and red cabbage juice. An acid-base indicator is a weak acid or weak base that dissociates in water to obtain the weak acid and its conjugated base or an otherwise weak base and its conjugated acid. The species and its conjugates have different colors. The point at which the indicator changes colors is different for each chemical. There is a pH range for which the indicator is useful. So, a figure that may be a good one solution may be a bad choice to test another solution. Some indicators can't actually detect acids or bases, but can only say approximate pH acid or base. For example, methyl orange only works with acidic pH. It would be the same color over a certain pH (acidic) and also neutral and alkaline values. What is acid-base balance? Your blood needs the right balance between acidic and basic (alkaline) compounds to function properly. This is called acid-base balance. Your kidneys and lungs work to maintain acid-base balance. Even small variations of the norm can have a significant impact on your vital organs. Acid and alkaline levels shall be measured on the pH scale. Increased acidity causes a decrease in pH. An increase in alkaline levels causes an increase in pH. If the acid in the blood is too high, it is called acidosis. If your blood is too alkaline, it's called alkalosis. Respiratory acidosis and alkalosis are the result of a problem in the lungs. Metabolic acidosis and alkalosis are the result of a problem in the kidneys. All of these conditions are caused by an underlying disease or disorder. depends on the reason. When you breathe, your lungs remove excess carbon dioxide from your body. If they can't do this, your blood and other fluids become too acidic. Symptoms of respiratory acidosis Symptoms may include fatigue, shortness of breath, and confusion. Respiratory tract causesS of respiratory acidosis Several different causes, including: chest deformations or injuries chronic pulmonary and respiratory diseases sedative obesity OverUseRespiration types There are no signs of chronic respiratory acidosis. This is due to the fact that your blood slowly becomes acidic and your kidneys adapt to compensate by restoring normal pH balance in your blood. Acute respiratory acidosis occurs suddenly, leaving the kidneys without time to adapt. Those with chronic respiratory acidosis may develop acute respiratory acidosis due to another disease, which causes the condition to deteriorate. Diagnosis of respiratory acidosis Complete physical examination is necessary. Diagnostic testing may include: arterial blood gas test metabolic panelpulmonary function test chest X-ray therapy in the treatment of respiratory acidosis should be immediately seen by a doctor to treat acute respiratory adosis, as it can be a life-threatening condition. Treatment is a targeted cause. Bronchodilator medications may provide the right for some respiratory obstruction. If your blood oxygen levels are too low, you may need oxygen. Non-invasive positive pressure ventilation or breathing apparatus may be required. In the treatment of chronic respiratory acidosis, the underlying cause of treatment should be determined in order to have the correct treatment. The cause may be organ deformity, infection, or certain types of inflammation. Any cause may require different treatments from antibiotics to breathing machine. In both cases, if you smoke, it is recommended to stop. Complications of respiratory acidosisRespirational acidosis are serious and require immediate medical attention. Possible complications of untreated respiratory acidosis are respiratory failure, organ failure and shock. Prevention of respiratory acidosisTete can take steps to help prevent some conditions that lead to respiratory acidosis. Maintain a healthy weight. Take sedatives only under strict medical supervision and never combine them with alcohol. Don't smoke. Metabolic acidosis occurs either when your body produces too much acid, or if your kidneys are unable to remove it properly. Symptoms of metabolic acidosis Symptoms may include rapid breathing, fatigue, and confusion. Causes of metabolic acidosis There are three main types of metabolic acidosis. Diabetic acidosis, also known as diabetic ketoacidosis, is a build-up of ketone bodies. This is usually due to uncontrolled type 1 diabetes. Hyperchloric acidosis is when the body loses too much sodium bicarbonate, often after severe diarrhea. Lactic acidosis is when too much lactic acid accumulates. This may be due to: long-term medications, including salicylates low blood sugar, or hypoglycemia alcohol deficiency cancerneer disease severe dehydration poisoning by consuming too much aspirin, ethylene glycol, and methanol For diagnosing metabolic acidosisDiagnostic testing may include serum electrolytes, urine pH, and arterial blood gases. If the acidosis has been confirmed, other tests may be required to determine the cause. The underlying condition of metabolic acidosis Should be treated. In some cases, sodium bicarbonate is prescribed to return blood to normal pH.Complications of metabolic acidosis In severe cases can cause shock and can be life-threatening. Alkalosis is when alkaline levels are too high due to reduced carbon dioxide or increased bicarbonate. There are five varieties of alkalosis. Symptoms of alkalosis Symptoms of alkalosis may include: muscle twitching, arm tremor, muscle spasms and tingling nausea vomiting Causes and types of alkalosisRespirational alkalosis is when your blood is low in carbon dioxide. This can be caused by a number of factors, including: high-altitude fever in the liver disease liver disease liver disease alicylate poisoning If you have alkalosteie carbon dioxide levels are low. This causes the body to release more bicarbonate to restore its blood pH levels back to normal. It's called compensated alkalosis. Your blood pH levels are normal, but your kidneys release more hydrogen carbonate, compensating for lower carbon dioxide. If you have too much bicarbonate in your blood, it is called metabolic alkalosis. This can happen with prolonged vomiting. Prolonged vomiting can also cause you to lose too much chloride. It's called hypochlovetica alkalosis. Some diuretic medicines may cause too much potassium to disappear. It's called hypokalamic alkalosis. For diagnosing alkalosisWith physical examination, diagnostic testing of alkalosis may include metabolic panel, blood gas analysis, urine analysis, and urine pH.Treatment with alkalosisSome drugs (such as chloride and potassium) can help improve chemical losses. Further treatment depends on the cause. Your doctor will need to monitor your vital signs and create the right plan to correct your pH imbalance. Complications of alkalosis In severe cases, alkalosis can cause cardiac arrhythmias or coma. Alkalosis and acidosis can become very serious if they are not treated. Contact your doctor if you think you have symptoms of both conditions. Condition.

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