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Clarity rating: 5 The text is easy to read and provides adequate context for any possible jargon or technical terminology. Consistency rating: 5 The text is consistent and organized well. Students can easily locate information throughout each chapter. Modularity rating: 5 The units are split in a logical manner and each chapter scaffolds from the prior chapter. The chapters break down into smaller sections that could be easily assigned as stand-alone requirements. Organization/Structure/Flow rating: 5 The topics in this book are presented in a logical flow and they are easy to read. The relationship to the prior chapters are evident. Interface rating: 4 The text does not show and significant interface issues. However, it would be helpful to include hyperlinks to each chapter in the Table of Contents. Grammatical Errors rating: 5 The text contains no grammatical errors. Cultural Relevance rating: 5 The book successfully promoted diversity, equity, and inclusion by both providing separate chapters/sections on culture/ability content and integrating it into the whole book. Comments This book exceeds my expectations in content; covering all of my course learning outcomes and more. It is very comprehensive; yet easy to read. It is of the perfect rigor for my 100-level health, safety, and nutrition class. Although there is no index, I appreciate the "Resources for Further Exploration" websites at the end of each chapter. These could be used in many ways; specifically to support student work on accompanying assignments. On the OpenStax website, there appear to be no ancillary materials, but at the beginning of the book, a link for a Google Conversation can be found. This offers some great resources and allows instructors to collaborate. I especially value the video observation library. There was also a lot of information found in the many appendices in the back of the book. This book integrates much diversity in ability, culture, and gender. For instance, children's mental health is covered in chapter 11. This is a growing topic that needs to be studied by early childhood educators. In addition, the book covered topics such as trauma and adverse childhood experiences. The book even includes general guidance on religious food choices for many cultures! The beginning of each chapter identifies licensing standards that align with the chapter and that is helpful. It could easily be re-created with the adopters' state licensing regulations. It would be helpful to also align the NAEYC Standards for Professional Preparation in each chapter. The sources used were all very credible and research-based. Not only so, but the content was developmentally appropriate in many ways. For example, in discussing biting, it explored other reasons for biting (communicating) than just something to admonish the child for. The book included much NAEYC content, which aligns perfectly with our NAEYC Accreditation. Reviewed by Deb Merrigan, Instructor, Normandale Community College on 3/1/24 The text covers key topics related to child safety, health, and nutrition. Missing are index and glossary sections. In addition, key oral health components related to child safety, health and nutrition are not addressed. read more Reviewed by Deb Merrigan, Instructor, Normandale Community College on 3/1/24 Comprehensiveness rating: 2 see less The text covers key topics related to child safety, health, and nutrition. Missing are index and glossary sections. In addition, key oral health components related to child safety, health and nutrition are not addressed. Content Accuracy rating: 5 The content appears to accurate and unbiased. This book provides a sufficient degree of depth and scope in the safety, health, and nutrition related to early childhood education. Relevance/Longevity rating: 5 The content appears to be up-to-date. One of the strengths of this book is that it is arranged in a way that to allow for necessary updates to be easily applied. Clarity rating: 5 The text is written in lucid, accessible prose. It consistently provides adequate context for each topic discussed. In addition, definitions of terminology are provided within the chapters to provide adequate context and meaning. Consistency rating: 5 Similar content is grouped together and the heading and body styles are consistent throughout the book. The text is divided into smaller reading sections that the reader will find easy to navigate. Modularity rating: 5 The text maximized readability and minimizes distractions. A nice feature throughout the chapters are callout boxes that help draw attention to information and prompt the reader to think more about the content they have just read. Organization/Structure/Flow rating: 5 The structure of the text is consistent, logical, and efficient. The layout and design, broken down by sections on safety, health, and nutrition create an easy path for readers to follow. In addition, the Appendix section which houses forms, checklists, and other relevant information is organized in a logical flow by topics. Interface rating: 5 The text navigation facilitates ease of movement throughout the book. Images, tables, and callout boxes are appropriate, meaningful and clear to the reader. Grammatical Errors rating: 4 Overall, editing and proofreading errors are minimal. Cultural Relevance rating: 4 The text aims to be sensitive to gender inclusiveness. Unless language was pulled from source content, the term child or adult is referred to with the pronoun they or them. In addition, efforts were made to use the terms caregivers or guardians to be inclusive of all families. Also, person first language is utilized. Comments Addressing oral health related to safety, health and nutrition is a key component missing in this book. For safety, needed is information on oral health signs of child maltreatment. For health and nutrition, a deeper dive into caries risk and prevention is needed. There is a brief mention in Ch. 1 on risks for dental caries (cavities) under the subheading Understanding Childhood Health Concerns. Consider listing information on risk factors for tooth decay and how untreated cavities can cause pain and infections that may lead to problems with eating, speaking, playing, and learning. In addition, what educators, caregivers, and staff can educate families and/or caregivers on cavity prevention related to oral home care and diet. Reviewed by Dawn Hendricks, Instructor, Clackamas Community College on 2/17/22 The textbook is quite comprehensive and provides thorough information on all aspects of health, safety and nutrition in early childhood settings. Unfortunately, there is not an index, which would make navigating the book more efficient. ... read more Reviewed by Dawn Hendricks, Instructor, Clackamas Community College on 2/17/22 Comprehensiveness rating: 5 see less The textbook is quite comprehensive and provides thorough information on all aspects of health, safety and nutrition in early childhood settings. Unfortunately, there is not an index, which would make navigating the book more efficient. However, the table of of contents at the front is detailed, providing an outline of the four different sections and fifteen chapters of the book. There is a robust appendix at the end with helpful resources such as health and safety checklists. Content Accuracy rating: 5 The content is accurate and un-biased. Since the author of the book teaches at a community college in California, there are some California-specific references and information which not be relevant to programs in other states. However, that information could easily be omitted or passed over. Relevance/Longevity rating: 5 The information on health, safety and nutrition in the book is current and up to date. The statistics that are used and the research that is referenced is current within the past few years. Given the way the book is formatted into smaller chapters and sections, it would be relatively easy to update the book as needed to maintain its relevance. Clarity rating: 5 The language level used in the book makes it accessible for community college students as well as potentially high school students. When educational jargon is used, brief explanations of the terms or concepts are provided. Consistency rating: 5 Each of the fifteen chapters are consistent in terms of organization, structure and framework. This makes the contents very reader-friendly and inviting. Modularity rating: 5 The main topics of the book, saftey, health and nutrition, each have their own section. These could easily be re-organized, given the sequence of a particular course. Within each of those three primary sections, there are chapters, which lend themselves to easily being re-organized or even omitted if need be. Organization/Structure/Flow rating: 5 The book is well-organized and presents the contents in a clear, logical sequence. Interface rating: 5 There were no discernible issues with the interface. Grammatical Errors rating: 3 There were some grammatical errors and spelling typos in the book, particularly in the appendix. Appendix N particularly had several errors. Cultural Relevance rating: 5 With the images, contents and examples, the book is inclusive of other cultures. Comments I do plan to use this book beginning in Fall 2022 in one of my courses. The course currently is "Nutrition, Music and Movement". However, given the comprehensive nature of this book, and the already existing need to re-design the course to align with other community colleges, I will be updating the course to "Safety, Health and Nutrition in Early Childhood". We are also planning to translate this OER into Spanish. Reviewed by Dawn Behan, Professor of Education; Director of Graduate Education Program, Mount Mercy University on 12/27/21 This textbook is quite thorough in the content areas of safety, health, and nutrition for early childhood students; however, it fails to include the necessity of teachers and child care providers being trained in CPR for children in early... read more Reviewed by Dawn Behan, Professor of Education; Director of Graduate Education Program, Mount Mercy University on 12/27/21 Comprehensiveness rating: 4 see less This textbook is quite thorough in the content areas of safety, health, and nutrition for early childhood students; however, it fails to include the necessity of teachers and child care providers being trained in CPR for children in early childhood: infants, toddlers, and pre-schoolers, as well as K-3rd grade students. It begins with a comprehensive Table of Contents which describes the text's four main sections: Section I, Introduction; Section II, Safety; Section III, Health; and Section IV, Nutrition. These sections are followed by a list of 16 appendices. Next, the Preface tells the reader about the following sections: Licensing of Source Content, Language Choices Throughout This Book (i.e., Terminology, Gendered Language, Family Structures and Forms, Person First Language), and Special Features Throughout the Book (i.e., Licensing Regulations, Pin It!, Pause to Reflect, Engaging Families, In the Classroom, and Resources for Further Exploration, and more). References are given on each page via footnotes. There is no Glossary or Index included in this text. Both would have been helpful in navigating this textbook. Although the author alludes to the difficulty in providing consistent terminology in the text, a glossary of terms would enhance an understanding of the vocabulary used in the text. Also, an index would be helpful in locating specific topics and information in the text, such as Trauma Informed Care, because only chapter headings are listed in the Table of Contents. Content Accuracy rating: 4 The content appears to be accurate and current; however, most content comes from resources that are web-based. Thus, the absence of dates on these resources must be taken into consideration, and resources should be checked for currency of content. Nonetheless, most content that is from dated sources seems to be fairly recent (i.e., within the past 3-15 years). The content included in the text appears to be unbiased; the content used in this text is from sources noted in footnotes on each page of the text. Relevance/Longevity rating: 5 Because the content appears to be fairly up-to-date, the content should not be obsolete within a short period of time. The text is written and structured in a way that updates to the content should be relatively easy to implement. Clarity rating: 5 The text is written in understandable language, and text boxes with examples, important information, and further resources are included and highlighted to add clarity to the text's vocabulary. Consistency rating: 5 The text uses consistent language and consistent text features which allow the reader to identify information that can enhance their understanding of the content throughout the text. For instance, one text feature, Pin It! uses examples and focuses on specific information that relates to the topic in the chapter. A couple of other text features, Pause to Reflect and In the Classroom, provide suggestions on how to apply the content. The author does note the inconsistency of early childhood terminology, as the text was compiled from “hundreds of sources” (Paris, 2020, p. 6). Modularity rating: 5 The text is divided into four sections, and each section is further divided into chapters (there are a total of 15). This text could easily be divided into four modules or by chapter for more specific, focused discussions. This text could be used for online, virtual, or Face-to-Face course delivery models. Organization/Structure/Flow rating: 5 Bolded sections, chapters, and subheadings; bulleted lists; text boxes; photos; figures; and tables are included to create an organized, structured flow throughout the text. These text features enhance the organization of the text content and complement the content information found in the regular (not bold) print. Interface rating: 5 This text is available on the internet and can be downloaded for reader preference. However, the reader needs to be aware there may be a charge on some websites if they choose to download more than the content presented for previewing the text. There did not appear to be any display features that may distract the reader. Grammatical Errors rating: 3 There are a number of mechanical and grammatical errors throughout the text. The text requires major proofreading and editing to make it appear professional. There is a note on p. 3 of the text under the heading, “Have Feedback or Resources to Share?” about what to do if the reader sees a typo. There are too many to point out in this textbook. Cultural Relevance rating: 5 The text is culturally neutral. Examples of this are the following, as noted in the text on pp. 6-7: the pronouns they or them was used as much as possible “to be more gender inclusive,” the word family was used in place of the word parents to be more inclusive of different family structures, and person- first language was used in an attempt to be respectful to students who encounter different living situations (e.g., poverty) or experience different personal characteristics (such as disabilities or medical conditions). Comments Overall, I liked this textbook. However, I would hesitate to adopt it for an education course due to all of the mechanical and grammatical errors in it. Reviewed by Susan Driscoll, Adjunct Faculty, Massasoit Community College on 6/30/21 The text is well organized and comprehensive. read more Reviewed by Susan Driscoll, Adjunct Faculty, Massasoit Community College on 6/30/21 Comprehensiveness rating: 5 see less The text is well organized and comprehensive. Content Accuracy rating: 5 The information is accurate and current. Relevance/Longevity rating: 5 The text is relevant and will help students apply the information in their classrooms. If it is used in a state other than California, the state licensing regulations will need to be reviewed. Clarity rating: 5 The text is easy to comprehend. It is well written. Consistency rating: 5 The terminology is consistent and up-to-date. Modularity rating: 5 The chapters are easy to break down into sections. Organization/Structure/Flow rating: 4 The text is organized to make it easy to comprehend. Main ideas are highlighted in boxes and coded to help students organize the information. An index would be helpful. Interface rating: 5 I didn't have any issues. Grammatical Errors rating: 4 The text is free from grammatical errors. There are forms in the appendix that do have some significant errors. Cultural Relevance rating: 5 The text is culturally sensitive. Comments I have not used this text but will in the future! Reviewed by jennifer kearns fox, faculty, Roxbury Community College on 6/30/21 The book is VERY comprehensive. It includes information on the following; Children’s Well-Being and Early Childhood Education, Safety (physical, social, emotional, environmental) and injury and illness prevention, basic first aide and safety... read more Reviewed by jennifer kearns fox, faculty, Roxbury Community College on 6/30/21 Comprehensiveness rating: 5 see less The book is VERY comprehensive. It includes information on the following; Children’s Well-Being and Early Childhood Education, Safety (physical, social, emotional, environmental) and injury and illness prevention, basic first aide and safety information, abuse & neglect (I link to MA state agencies), overall health and wellness, caring for children with special needs, and nutrition. I recommend this book for a health safety nutrition class OR chapters for special needs courses or foundational courses in ECE. I find each chapter useful and relevant and in my courses use most chapters and include links to MA state agencies and NAEYC & Head start supports. Content Accuracy rating: 5 As stated above, the book is comprehensive and does include most pertinent information around supporting health, safety, and nutrition in ECE. Though I find it accurate I stress the importance of pairing this with local, state and federal resources. For example, I write this in June 2021. Much has changed in the landscape of the world and with this topic in regard to COVID, protocols, safe care, immunizations, etc. Relevance/Longevity rating: 5 Please see above. Comprehensive, relevant, accurate. Clarity rating: 5 This text is very easy to use, read, and understand. I recommend it for PD, parents, college courses, and as a resource to child care settings. Consistency rating: 5 This text is well organized and consistent. Modularity rating: 5 Though this is well organized, I do use the chapters out of order. I do find that the organization and information is easy to pair with other chapters. For example, you can read chapter 5 after chapter 9. Organization/Structure/Flow rating: 5 See above. The organization is clear, logical, and easy to understand or reorganize for your work/purposes. Interface rating: 5 I used a phone and computer and could access the entire text. I do recommend using a computer. I used 3 browsers (chrome, explorer, and firefox) and had no issues accessing or moving between chapters. Grammatical Errors rating: 5 I did not edit this book. There are no obvious errors. I was NOT looking for errors in a published OER text. Cultural Relevance rating: 5 This book is culturally sensitive. Reviewed by Sandra Scialabba, Instructor, Midlands Technical College on 4/25/21 This book is the most comprehensive one that I have found. It covers every aspect of safety, health, and nutrition as it relates to children from birth to 8 years old. It covers topics that are overlooked, or not as emphasized, in other textbooks,... read more Reviewed by Sandra Scialabba, Instructor, Midlands Technical College on 4/25/21 Comprehensiveness rating: 5 see less This book is the most comprehensive one that I have found. It covers every aspect of safety, health, and nutrition as it relates to children from birth to 8 years old. It covers topics that are overlooked, or not as emphasized, in other textbooks, such as car seat safety, using technology and media safely, what to look for on labels of art supplies to identify whether or not they have passed a toxicology review, taking into consideration developmental milestones and how they impact children's behaviors, reasons why toddlers bite, diagram explaining why the safest sleeping position for an infant is on his back, and feeding children who have special needs. Content Accuracy rating: 5 Facts are accurate, and current. The resources used are current and up to date. Relevance/Longevity rating: 5 The book has covered the objectives needed for an early childhood program. It will be easy to add up dates as needed. At this particular time, the only thing I can think of to add is information about COVID-19. The only reason I would choose not to use this book is that it is specific to the licensing regulations in California, which is overseen by the Community Care Licensing Division of the California Department of Social Services. Since I am an instructor in South Carolina, I would need to revise each section in every chapter that correlates to licensing regulations to correlate to the specific licensing regulations provided by The Division of Early Care and Education through the Department of Social Services in South Carolina. Clarity rating: 5 This book is easy to read and understand. Students will not have any trouble comprehending the content. It is easy to understand how to put the safety, health and nutritional information into practice in a variety of child care settings. Consistency rating: 5 The terminology used is not only consistent, it is also current and relevant for today's society and student. Modularity rating: 5 This book is easy to breakdown into sections for class reading and homework assignments. It will be easy to include in an online format, such as D2L, because it is already divided into short chapters. Organization/Structure/Flow rating: 4 I would recommend that the Table of Contents have a Section V: Appendix A-P The Appendix is currently included in Section IV: Nutrition Throughout the book, some of the references to the Appendix aren't worded consistently with the title of the document. For example: Page 102 refers to "checklists" in Appendix E, however, there is only one checklist. Page 232 refers the reader to Appendix J for more information on illnesses, however, it should refer the reader to Appendix M. Page 243 refers the reader to Appendix K, however, it should refer the reader to Appendix J. There are other examples like these that need to be revised. Interface rating: 5 No interface issues noticed. Grammatical Errors rating: 5 No grammatical errors noticed. Cultural Relevance rating: 5 The text is culturally sensitive. The pictures and examples used, as well as the relevant content provided throughout the book, show diversity with respect to races, ethnicities, and backgrounds. The book is sensitive to using "people first" language and recognizes that what constitutes a family is going to be different for each child. Some examples include: Chapter 7 highlights the culture of sleep, referring to the ways and places that people sleep. Some people sleep inside, outside, in beds, on hammocks, on mats, on the floor, alone, with children, only at night, etc. This chapter also highlights that Developmental Screening Tools need to be culturally sensitive. Chapter 11 highlights that culture influences every aspect of human development, including mental health. Chapter 15 highlights that menu planning needs to take into consideration cultural and religious beliefs. Comments The special features included throughout the book are especially helpful. These features are easily identifiable through the use of color-coded "callout boxes" containing symbols. They include: Licensing Regulations Pin It! Pause to Reflect Important Information Quotes Engaging Families In the Classroom Resources for Further Exploration I highly recommend this book if you are an instructor in California. If you are an instructor in any other state, you will need to make revisions that reflect your particular state licensing regulations. PrefaceSection I: Introduction Chapter 1: Children’s Well-Being and Early Childhood Education Section II: Safety Chapter 2: Preventing Injury & Protecting Children’s Safety Chapter 3: Creating Safe Indoor Environments Chapter 4: Creating Safe Outdoor Environments Chapter 5: Caring for Minor Injuries and Preparing for and Managing Emergencies Chapter 6: Child Maltreatment Section III: Health Chapter 7: Promoting Good Health & Wellness Chapter 8: Prevention of Illness Chapter 9: Supportive Health Care Chapter 10: Children with Special Health Care Needs Chapter 11: Children’s Mental Health Section IV: Nutrition Chapter 12: Basic Nutrition for Children Chapter 13: Protecting Good Nutrition and Physical Wellness  Chapter 14: Providing Good Nutrition Chapter 15: Menu Planning and Food Safety Submit ancillary resource Early childhood is a critical time in development. Many outcomes, both positive and negative, have their beginnings in these years. It is vital that children’s health and safety be protected. High-quality early care and education programs can play a valuable role in improving outcomesfor children. Jennifer Paris is a full-time faculty member of the Early Childhood Education Department. She previously taught Child Development courses as an adjunct for Rio Hondo College in Whittier for 11 years, MiraCosta College in Oceanside for 6 years, and Cerritos College in Norwalk for 3 years. Her special interests include OER (open educational resources) and online teaching. She has cared for and taught children of all ages and had experiences throughout her schooling in campus Child Development lab schools. Suggest an edit to this book record Although consumers, scientists, entrepreneurs, and policymakers want evidence on potential new relationships between nutrients and chronic diseases as soon as possible, conclusive evidence is typically elusive. Gathering sufficient knowledge to draw conclusions about causal relationships, especially between a given nutrient and a chronic disease, remains a challenge. —Evolution of Evidence for Selected Nutrient and Disease Relationships, 2002 A number of recent court cases have challenged the validity of criteria that underlie U.S. food safety regulations, potentially undermining the authority of regulatory agencies to enforce those standards. Concerned about the growing controversy, Congress requested that the Institute of Medicine and the National Research Council's Division of Earth and Life Studies (DELS) study the scientific basis for food safety criteria and the extent to which they actually protect the health of consumers. Scientific Criteria to Ensure Food Safety (2003), issued by the IOM's Food and Nutrition Board, provides a blueprint for development of scientifically based food safety regulatory criteria to protect human health. The report calls for Congress to require the development of a comprehensive national plan to harmonize and integrate the foodborne disease surveillance conducted by public health agencies with the efforts of food safety regulatory agencies to monitor pathogens across the food production and distribution continuum. This integration would make it possible to define links between foodborne disease and specific foods or food groups and to measure the effectiveness of interventions. Congress also should give regulatory agencies clear authority to develop, implement, and enforce food safety criteria, as well as the administrative flexibility to update these criteria as needed. The criteria should be clearly linked to specific public health goals. In developing the criteria, regulatory agencies should adopt strategies based on sound science and that are clear in their intent. In this effort, the agencies can draw on a variety of scientific methods, such as risk assessments and statistical process control.Scientific Criteria to Ensure Food Safety (2003)…provides a blueprint for development of scientifically based food safety regulatory criteria to protect human health.Many everyday foods contain chemicals that were added during production to achieve a desired result, such as enhancing flavor or extending shelf life. The Food Chemicals Codex (FCC), produced by the IOM's Food and Nutrition Board, is the accepted compendium of specifications for defining the quality and purity of direct and some indirect food additives, ingredients, and substances that are used in food. FCC specifications, which limit potential toxic contaminants, protect the health of consumers and provide a level playing field for industry. The U.S. Food and Drug Administration (FDA) and various national and international food regulatory authorities, recognizing the scientific basis of FCC specifications, frequently reference or have officially incorporated the FCC into their guides in an effort to ensure the safety of the food supply. The National Academies published the first edition of the Food Chemicals Codex in 1966, and has since issued three more editions, the latest in 1996, as well as a series of supplements. The Food Chemicals Codex: Third Supplement to the Fourth Edition (2001) is the latest of the updates. It describes several new testing methods and reviews changes in government policies, including revisions in policies pertaining to the contamination of food chemicals with heavy metals. Presented in an easy-to-use format, the report is of interest to producers and users of food chemicals, to researchers, and to other individuals and groups involved in the technical aspects of food safety. The fifth edition of the Food Chemicals Codex is slated for publication in autumn of 2003.View in own windowaNAD—no appropriateMatrix of Scores Used in Establishing Relative Priority Among Dietary Supplements.SOURCE: Proposed Framework for Evaluating the Safety of Dietary Supplements, 2002, page 9.Consumer use of dietary supplements has increased significantly over the past decade since Congress passed the Dietary Supplement Health and Education Act in 1994. Based on this statute, these supplements are presumed safe, similar to conventional foods. The U.S. Food and Drug Administration has no authority to require safety studies prior to a product's commercial introduction and must prove that a supplement presents an unreasonable risk to health in order to remove it from the market. In contrast, drugs must be proven safe and effective before they are marketed. The FDA wants to improve its ability to assess the safety of both traditional and new supplements, and the agency turned to the IOM for help. In a report titled Proposed Framework for Evaluating the Safety of Dietary Supplements (2002), IOM's Food and Nutrition Board proposed a scientifically based approach that would enable the FDA to assess safety by analyzing information that already is available. The proposed process consists of three steps: reviewing readily available information to screen for potentially hazardous substances; identifying and prioritizing those substances that require the most immediate attention; and then conducting individual indepth safety evaluations, which would be based on collecting and reviewing additional data regarding a substance's safety (including data obtained from industry). Comments received about the proposed framework have been undergoing review. Phase two of the study is to review six supplements to demonstrate how the proposed assessment process would work in practice. A final report will present the completed framework along with the prototype safety reviews.Although the U.S. food supply is among the safest in the world, foodborne diseases still exact a considerable toll, causing some 76 million illnesses and 5,000 deaths in the country each year. In the face of such public health problems, the U.S. Department of Agriculture (USDA) is formulating risk assessments to identify important foodborne hazards and evaluate potential strategies to prevent, reduce, or eliminate those hazards. One of the initial projects is a risk assessment of the health impact of a particular variety of the bacterium Escherichia coli, called E. coli O157:H7, that is frequently found in ground beef. The USDA asked the IOM to review the project's first draft of this risk assessment. Its report, titled Escherichia coli O157:H7 in Ground Beef: Review of a Draft Assessment (2002), commends the USDA on the magnitude of its effort and the principles underlying the assessment. In its recommendations, the report notes that the assessment as with all risk assessments will be improved by making the inner workings of the analysis more explicit. This will require, making public details about assumptions, data sources, and equations used, and limitations and uncertainties of the conclusions. The report also calls on the developers of the risk assessment model to identify any gaps in the available data. Charting such deficiencies will help in setting priorities for future research, which, in turn, may lead to more informed policy decisions. Dioxin and dioxin-like compounds, or DLCs, are found throughout the environment; they are transported through air and deposit on plants, soil, and sediment in waterways. People are exposed to these unintentional environmental contaminants primarily through the food supply, although at low levels, particularly by eating animal fat in meat, dairy products, and fish. While the amount of DLCs in the environment has declined since the late 1970s, the public continues to be concerned about the safety of the food supply and the potential adverse health effects of DLC exposure, especially in groups such as developing fetuses and infants, who may be more sensitive to the toxic effects of these compounds. Numerous health effects have been linked to exposure to DLCs, including skin damage, cancer, non-insulin dependent diabetes in adults, neurological and immune system impairments in infants, and endocrine system disruption. Many of these effects were identified in individuals who had high levels of exposure. However, information is limited on how low-level DLC exposure through foods, defined as occurring in everyday life, influences the development of cancer and other diseases. To devise strategies for reducing human exposure to DLCs from the food supply, the National Science and Technology Council's Interagency Working Group on Dioxin with support from the U.S. Department of Agriculture, the U.S. Department of Health and Human Services, and other agencies and sponsors, requested the help of the IOM. The resulting study, Dioxins and Dioxin-like Compounds in the Food Supply: Strategies to Decrease Exposure (2003), recommends policy options to reduce exposure to these contaminants while considering how implementing these options could both reduce health risks and affect nutrition, particularly in sensitive and highly exposed groups. The report recommends that a federally-sponsored interagency task group develop and implement an integrated risk-management strategy and action plan to reduce human exposure to dioxins in foods and that government officials collaborate with the private sector to identify and pursue voluntary interventions to further minimize levels of these toxic compounds in human foods and animal feeds. However, the health risks posed by the levels of dioxins in foods have yet to be ascertained, so the report does not recommend regulatory limits on DLCs in food or feed.Numerous health effects have been linked to exposure to DLCs, including skin damage, cancer, noninsulin dependent diabetes in adults, neurological and immune system impairments in infants, and endocrine system disruption.Currently, the IOM and DELS are conducting a study to outline science-based approaches to identify and assess (or predict) unintended effects of genetically engineered foods on human health. This study will identify appropriate scientific questions and methods for determining unintended changes in the levels of nutrients, toxicants, allergens, or other compounds in food from genetically engineered plants and animals and outline methods to assess the potential short and long-term human health consequences of such changes. The study will compare genetically engineered foods to foods derived from other genetic modification methods (e.g. cross breeding) with respect to the expected frequency of compositional changes resulting from the modification process and the potential frequency and severity of the effects of these changes on consumer health. As part of this comparison, the likelihood that elevated toxin or allergen levels would occur in domesticated animals or plants that are modified by different methods will be considered. Based on this analysis, the committee will discuss whether certain safety issues are specific to genetically engineered foods, and, if so, recommend approaches for addressing these issues. The committee also will separately evaluate potential unintended compositional changes and health effects of foods derived from cloned animals. This evaluation will be presented in a short report separate from, but designed to accompany, the full-length report on foods derived from genetic modification methods.The Special Supplemental Nutrition Program for Women, Infants, and Children commonly called the WIC program provides food and nutrition education to low-income pregnant or postpartum women, infants, and children to age 5 years. Applicants must face “nutrition risk” in order to receive services. The most common category of risk is “dietary risk” that is, routine failure to consume the number of daily servings of various types of foods specified by the U.S. Department of Agriculture's Food Guide Pyramid. But in practice, assessing dietary risk is difficult. The USDA asked the IOM to evaluate various tools for assessing dietary risk and to make recommendations on how risk assessment can be used in determining eligibility for the WIC program. Dietary Risk Assessment in the WIC Program (2002) concludes that none of the assessment tools currently available can accurately measure an individual's true dietary risk and, further, that developing a useful tool is unlikely. The report recommends instead that all women and children ages 2 to 5 years who meet the program's general eligibility requirements (based on income and other social factors) should be presumed to also meet the requirement of dietary risk, since abundant evidence shows that nearly all of these individuals routinely fail to meet national nutrition guidelines. By presuming dietary risk, the WIC program retains its potential for preventing and correcting nutrition-related problems while avoiding misclassification errors that could lead to denial of services.AIM FOR FITNESS Aim for a healthy weight.Be physically active each day.BUILD A HEALTHY BASE Let the Pyramid guide your food choices.Choose a variety of grains daily, especially whole grains.Choose a variety of fruits and vegetables daily.Keep foods safe to eat.CHOOSE SENSIBLY Choose a diet that is low in saturated fat and cholesterol and moderate in total fat.Choose beverages and foods to moderate your intake of sugars.Choose and prepare foods with less salt.If you drink alcoholic beverages, do so in moderation.SOURCE: Dietary Risk Assessment in the WIC Program, 2002, page 2.A vast majority of infants in the United States and other industrialized countries receive infant formula at some time during the first year of life. For many of these infants, formula is often the sole source of nutrition for the first four to six months of life. Proper nutrition, while important throughout life, is particularly important during infancy when growth and development are most rapid and when the consequences of inadequate nutrition are most severe. Because of the paucity of consistent guidelines for assessing the safety of ingredients added to infant formula, the U.S. Food and Drug Administration (FDA) and Health Canada asked the IOM to review methods currently used to assess safety of ingredients new to infant formula and identify tools to evaluate the safety of ingredients new to infant formula under intended conditions of use in term infants.In the face of natural disasters or other emergency situations, such as the displacement of large numbers of people by political or military conflicts, providing the victims with rapid, short-term food relief at an early stage is often of paramount importance. The U.S. Agency for International Development (USAID) and the Department of Defense, which distribute most of the emergency food aid provided by the federal government, asked the IOM for advice on developing a product specifically tailored to this use. An IOM report, titled High-Energy, Nutrient-Dense Emergency Relief Food Product (2002), describes the technical specifications for a product that would satisfy the nutritional requirements of all people older than 6 months and serve as their sole source of subsistence for up to 15 days. To achieve this, the committee first determined the nutritional profile of a single product that would meet the nutritional needs of young children as well as older adults. The product also needed to be able to be delivered by either land or air; to be able to be eaten on the move without preparation, and; to be acceptable to people from diverse cultural, ethnic, and religious backgrounds. In addition, the product needed to be stable during prolonged storage under adverse conditions. When the study was requested, no U.S. company produced such a product, though some foreign firms did so. The specifications detailed in the report are to be used by both agencies in their call for bids from U.S. companies to supply such products. Since federal regulations require that most of the food to be distributed as aid be purchased from U.S. companies, providing specification for use by domestic manufacturers would greatly assist the agencies in responding quickly and effectively to emergencies.Potable water is provided as a top priority and is available with the EFP.Individuals will eat to meet their energy requirements.The product is to be consumed by all age groups, except infants less than 6 months of age; thus the product is not to be used in lieu of breast feeding, which is encouraged to at least 1 year of age with complementary use of the EFP after 6 months of age.It is not to be used as a therapeutic product and is not appropriate for severely malnourished individuals.It may constitute the sole source of food for target recipients for up to 15 days.Recipients are likely to be at least mildly malnourished and/or suffer from mild to moderate diarrhea and other debilitating diseases brought about by unsanitary conditions and exacerbated by stress.The recipient population may have nutrient needs comparable to well-nourished individuals in spite of smaller body weights due to maintaining muscle and visceral mass at the expense of body fat.The product should provide a nutrient density that will meet or exceed the nutrient recommendations as specified by the recommended intakes (IOM, 1997, 1998, 2000, 2001; NRC, 1989) which are designed to meet the needs of almost all individuals in each life stage and gender group (with the exception of infants) without exceeding Tolerable Upper Intake Levels (IOM, 1997, 1998, 2000, 2001).Nutrient needs of pregnant and lactating women are not included in the calculations, but it is assumed they will consume more than the daily ration based on individual needs for additional energy beyond the average of 2,100 kcal/daySOURCE: High-Energy, Nutrient-Dense Emergency Relief Food Product, 2002, page 4.Consumers armed with sound information about food and nutrition are more likely to make good choices about what they eat. In 1941, the Food and Nutrition Board (FNB) issued its first set of Recommended Dietary Allowances (RDAs) for vitamins, minerals, proteins, and energy. Since then, RDAs revised numerous times and expanded to include 27 nutrients have served as the basis of almost all federal and state food and nutrition programs and policies. As scientific knowledge regarding the roles of nutrients has multiplied, the FNB has now adopted an expanded system for describing nutritional needs. This system is collectively called Dietary Reference Intakes (DRIs). Developed jointly by U.S. and Canadian scientists, the new DRIs provide quantitative estimates as reference values for specific uses. These include the amounts of nutrients that individuals need to optimize their health and prevent disease and deficiencies, as well as amounts that are upper intake levels or limits to help people avoid potential adverse effects from consuming too much of a nutrient. To date, seven reports have been published by IOM; the three most recent reports provide DRIs for energy yielding nutrients such as dietary fats and carbohydrates and for trace elements and important vitamins, as well as a report on how DRIs should be used in dietary planning. The IOM is currently working on two additional DRI reports: one will focus on the intakes of sodium, potassium, chloride, sulfate, and water; and another will identify general guiding principles for use of DRIs in nutrition labeling.DRIs…include the amounts of nutrients that individuals need to optimize their health and prevent disease and deficiencies, as well as amounts that are upper intake levels or limits to help people avoid potential adverse effects from consuming too much of a nutrient.Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc (2001). This report concludes, based on national nutrition surveys in the United States, that most people can obtain the recommended intakes for these nutrients from their diets, without taking supplements. One exception is that pregnant women usually need iron supplements to meet their increased daily requirements. Among other findings, the report notes that fruits and vegetables yield significantly less vitamin A than previously thought. This means people must make sure they eat enough of the foods that are richest in vitamin A (such as carrots, sweet potatoes, and broccoli) in order to meet their daily requirement, especially if they do not eat animal-derived foods, which serve as additional good sources of the nutrient for most people. The report also identifies several important gaps in what is known about these micronutrients. Some of the priority areas for research include identifying factors that impair or enhance their absorption and metabolism in the body, and exploring more fully the role of arsenic, boron, nickel, silicon, and vanadium in human health.Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids (2002). This report describes acceptable intake ranges for each of these energy sources, based on evidence that consumption above these ranges can lead to developing chronic diseases, including coronary heart disease, obesity, diabetes, and cancer, while consumption below these ranges can lead to problems caused by nutrient imbalances or inadequacies. Adults should get 45 percent to 65 percent of their calories from carbohydrates, 20 percent to 35 percent from fat, and 10 percent to 35 percent from protein. Acceptable ranges for children are similar to those for adults, except that infants and younger children need a slightly higher proportion of fat (from 25 percent to 40 percent of their caloric intake). The report recommended ranges for polyunsaturated fats and recommends that saturated fatty acids, trans fatty acids, and cholesterol be as low as possible in the diet while consuming a nutritionally adequate diet. Among other findings, the report suggests that added sugars that is, sugars incorporated into foods and beverages during production should not exceed a maximal level of 25 percent of total calories consumed, since more people whose diets are high in added sugars in the United States have been found to consume inadequate amounts of essential nutrients. The report also stresses the importance of balancing diet with exercise. To maintain cardiovascular health at a maximal level, adults and children alike should spend at least one hour each day in moderately intense physical activity, a total that is double the daily minimum goals set by previous federal recommendations.Dietary Reference Intakes: Applications in Dietary Planning (2003). This report is the second in a series providing guidance on the use and interpretation of DRIs in planning and assessing diets. Some of the activities that can benefit by taking DRIs into account include individual dietary planning, institutional and military food planning, planning for food assistance programs, food labeling, food fortification, developing new or modified food products, and assuring food safety. Whether for an individual or a group, dietary planning involves developing a diet that is nutritionally adequate without being excessive. Food-based education tools, such as the USDA's Food Guide Pyramid, are frequently used to help an individual plan a healthful diet. For group planning, the report presents a new approach based on determining the distribution of the long-term average intakes of individuals in the group. This method can serve to maximize the number of group members whose daily nutritional intakes are likely to be adequate but not excessive. The report stresses that dietary planning must be a cyclical activity that involves planning, implementation, assessment, and reassessment.Dietary planning must be a cyclical activity that involves planning, implementation, assessment, and reassessment.The Department of Health and Human Services estimates that 64 percent of adults are overweight and obese, more than 15 percent of children and teens carry excess pounds, and a total cost estimated to be $117 billion is spent annually on obesity and obesity-related health problems. Research shows that overweight children are at risk for serious health problems, including diabetes and cardiovascular disease. According to one report, about 60 percent of children ages 5 to 10 who are overweight or obese already have at least one cardiovascular disease risk factor, such as elevated total cholesterol levels or higher blood pressure, and 25 percent have two or more. The IOM is currently conducting a study on the Prevention of Obesity in Children and Youth to assess the factors responsible for the epidemic of obesity in children and to develop an action plan (foc

diet-related conditions are not provided.The Dietary Guidelines for Americans are jointly developed and issued by the U.S. Department of Agriculture and the U.S. Department of Health and Human Services. Updated every five years, they are the cornerstone for many federal nutrition programs and policies.Why Study Nutrition and Health?More than half of U.S. adults – 129 million people – have one or more preventable chronic diseases, such as cardiovascular disease, high blood pressure, type 2 diabetes, and some cancers, which are often related to diet and physical inactivity.Beyond health effects, nutrition-related diseases create strains on productivity, health care spending, health disparities, and military readiness. Addressing such issues requires understanding interrelated biological and social environmental determinants, and corresponding solutions.As a scientific field, nutrition is integral to health promotion and disease prevention. Information from many disciplines, including anthropology, biology, biochemistry, economics, epidemiology, food science and technology, genetics, physiology, psychology, and sociology, are applied in nutritional studies. Scientists consider what people eat and drink, and take as dietary supplements, during different life stages and over time. They focus on interconnections to build evidence for public policy, health system, and environmental improvement strategies.Nutrition Research at the National Institutes of HealthThe Precision Medicine Initiative is a long-term research project at NIH. This initiative aims to understand how a person's genetics, environment, and lifestyle can determine the best approaches to prevent or treat disease. As part of the Precision Medicine Initiative, NIH has a plan to accelerate nutrition research. While dietary guidelines and related public health approaches can help improve nutritional status across a population, researchers have growing appreciation for how different factors may affect people differently.NIH nutrition research will help answer: what should I eat to stay healthy?The 2020 – 2030 Strategic Plan for NIH Nutrition Research focuses on how nutrition and dietary patterns affect all health conditions and emphasizes the importance of understanding variation among people. NIEHS assists with the coordination and implementation of this nutrition research plan. What is NIEHS Doing? With funding and support from NIEHS, scientists are looking at whether certain nutritional components may protect people's health when they are exposed to harmful chemicals and other environmental hazards. Scientists are also studying whether environmental factors can worsen health conditions related to nutrition or dietary patterns.Nutrition May Reduce Harmful Health Effects From Environmental FactorsThe concept of reducing risk from harmful exposures tends to mean removing or decreasing exposure to environmental contaminants. But that form of prevention can be difficult to achieve. An alternative concept is to focus on nutrients with potential to be protective or reduce the risk of harmful health effects from environmental factors. Researchers at the NIEHS-funded University of Kentucky Superfund Research Center have an innovative, long-running program that studies if and how nutrition can reduce the risk of harmful health effects from environmental pollutants. Their research is based on the premise that nutrition should be considered a necessary variable in the study of human diseases associated with exposure to environmental contaminants.Based on years of study, there is evidence that certain aspects of nutrition are protective and should be integral in efforts to intervene or prevent toxic health effects of some environmental factors.For example, the researchers uncovered how a person's diet can protect against the harmful health effects of exposure to polychlorinated biphenyls (PCBs). Now banned from production, PCBs were once commonly used in making products such as heat transfer fluids and coolant in electric transformers. They discovered that certain nutrients, vitamin E and omega 3-fatty acids, can reduce cell damage from PCB exposure and that a type of fiber found in vegetables can potentially protect against cardiovascular problems related to PCB exposure. Conversely, they also found that dietary fat that is high in linoleic acid can worsen the cardiovascular effects of PCBs.Other Findings From NIEHS-supported Research Include the Following:ADHD – Researchers demonstrated that low vitamin D during pregnancy was related to an increased risk of attention deficit hyperactivity disorder (ADHD), a finding that could lead to new prevention measures.Asthma – Asthma is a common childhood disease that disproportionately affects urban minority populations. Researchers discovered that vitamin D has a protective effect among children with asthma who live in urban environments with poor indoor air quality. In other words, obese children with blood levels low in vitamin D had worse asthma than children with higher vitamin D levels.A diet deficient in antioxidants--micronutrients that help defend cells in the body--has been suggested as one reason for the asthma epidemic. The traditional Mediterranean diet typically includes foods rich in antioxidants such as vegetables, fruits, nuts, fish, and olive oil, with a low intake of meat. This diet pattern has been shown to be protective of asthma and allergic disease in multiple studies. A study funded by NIEHS found that following this type of diet reduced the chance of asthma development among children in Lima, Peru.Autism Spectrum Disorder – Autism spectrum disorder (ASD) is a broad range of conditions that affect communication and behavior. Environmental factors and genetics are thought to contribute to ASD, which affects 1 in 36 children in the U.S.While more research is needed on the potential role nutrition may play in the development of ASD, studies reveal promising findings.Taking a prenatal vitamin during early pregnancy was associated with a lower rate of ASD in a 2021 study. This finding indicates that prenatal vitamins or supplemental folic acid could be preventative for ASD.The younger siblings of children with ASD have a greater chance of developing the disorder due to shared genetics and similar environment. A NIEHS-funded researcher reported, in 2019, that when mothers of these children took prenatal vitamins with folic acid in the first month of pregnancy, the recurrence of autism was reduced by about half. Folic acid is the synthetic form of folate, also known as vitamin B-9, which is found in many foods, such as dark-green leafy vegetables, beans, peas, broccoli, and oranges.Autoimmune Diseases – Lupus, an autoimmune disease, occurs when your body's immune system attacks your own tissues and organs, affecting many different body systems. Lupus can flare up when genetically predisposed people encounter certain environmental agents, such as air pollutants, pesticides, or other chemicals. A study funded by NIEHS found that dietary micronutrients could either improve or worsen lupus symptoms. Study results suggest that dietary modification, such as more vitamin B-12, zinc, and folic acid, might be a therapeutic approach warranting further investigation in lupus patients.Other NIEHS-funded research indicates that adequate vitamin D levels may be important for preventing immune dysfunction in older people.Brain Health – Consuming omega-3 fatty acids, found in fish and flaxseed oil, may protect against brain shrinkage in older women who live in areas with high levels of air pollution called fine particulate matter (PM2.5).Women living in locations with higher PM2.5 had significantly less white matter in their brains, a sign of shrinkage. But in those locations, women with high blood levels of omega-3 fatty acids had white matter that appeared healthier.Cancer – More than 20 years ago, NIEHS researchers demonstrated a gene-diet interaction in a study that found isothiocyanates, a compound in cruciferous vegetables (e.g., broccoli, cauliflower, and cabbage), was protective against lung cancer.In-house researchers at NIEHS found that vitamin D supplementation may be useful in breast cancer prevention. The study looked a group of women with a higher risk of developing breast cancer. The women who had high blood levels of vitamin D and regularly took vitamin D supplements had lower rates of postmenopausal breast cancer over a 5-year follow-up period.Cardiometabolic disorders – These conditions include cardiovascular problems, diabetes, and nonalcoholic fatty liver disease. Dietary fiber may protect against metabolic and fatty liver diseases related to perfluorooctoane sulfonate (PFOS) exposure, according to a NIEHS-funded study in mice. Study results may be useful for designing intervention strategies to reduce disease risk in PFOS-exposed populations.A NIEHS-funded study found that triclosan, an antimicrobial found in medical soaps and household products, accelerated development of fatty liver, fibrosis, and nonalcoholic fatty liver disease in mice that ate a high-fat diet. Understanding the molecular mechanisms by which triclosan disrupts metabolism and the gut microbiome, while also stripping away liver cells' natural protections, may provide a basis on which to develop therapies.Obesity is a chronic health condition that increases the chance of developing cardiometabolic disorders. High lead levels during pregnancy were linked to child obesity in a large study, partially funded by NIEHS. Children born to women who have high blood lead levels are more likely be overweight or obese, compared to children whose mothers have low levels of lead in their blood. But women who take folic acid supplements during pregnancy may reduce the chance that their children are obese.Inflammation – Many epidemiological studies provide evidence that cardiovascular diseases are linked to environmental pollution. NIEHS-funded researchers found that a mix of B vitamins (folic acid, B-6, and B-12) may protect DNA in immune cells from harmful effects of PM2.5 air pollution. They found that this pollution caused changes in DNA related to inflammation and metabolism, which may be tied to cardiovascular or respiratory conditions. According to the researchers, dietary supplementation with B vitamins almost completely prevented the changes to DNA that may lead to adverse health effects.NIEHS-supported research shows that a key regulatory enzyme inhibitor discovered in the laboratory of Bruce Hammock, Ph.D., of the University of California, Davis, can alleviate inflammation linked to health issues that are caused by a high-sugar diet. The study, conducted in a mouse model, show promise as a basis for developing treatments of gut barrier dysfunction caused by high sugar consumption in humans.Liver health - Prenatal exposure to certain environmental chemicals may pose significant risks to liver health for both mothers and their newborn children. Researchers found increased risk for liver injury and steatosis (fat accumulation in the liver) linked to air pollutant, phthalate, and pesticide exposures during pregnancy. But the researchers also found that treating women with folic acid and other B vitamin supplements during pregnancy may counter some adverse effects of prenatal exposures on the livers of children. The researchers note that reducing exposure to contaminants remains key to decreasing the risk of liver injury onset.Reproductive Health – There is growing acceptance that nutrition may be related to fertility, and specifically the success of infertility treatment in women. NIEHS-funded research found that women consuming a "pro-fertility" diet that included supplemental folic acid, vitamin B12, vitamin D, low-pesticide fruits and vegetables, whole grains, seafood, dairy, and soy foods have a greater chance of live birth following assisted reproductive technologies.Environmental Factors Affect NutritionEating Fish – Eating fish can provide many health benefits, but consumers should be cautious. Some types of fish caught in certain areas are lower in mercury, PFAS, and other contaminants than other fish. Fish consumption advisories help people understand what fish are safe to eat, for whom, and in what quantities.Fish consumption during pregnancy is a complex scientific topic. Other NIEHS-supported researchers created a framework for untangling questions about the risks and benefits of fish consumption. It could help produce clearer guidance on fish consumption for pregnant mothers.A 2024 study found that people who frequently eat seafood may have an increased risk of exposure to PFAS, and this source of exposure may be underestimated. Among all types of seafood sampled in the study, the highest PFAS concentrations were found in shrimp and lobster. The New Hampshire-based researchers said that because PFAS are in many aspects of the environment, it is unclear where and how these chemicals enter the marine food chain. More research is needed.Food Environments – A systematic review published in 2020, partially funded by NIEHS, suggests that the health of some children may be affected by food environments near schools. Researchers examined the presence of fast-food outlets, convenience stores, supermarkets, and grocery stores near schools along with measures of overweight/obesity.This review found that when fast food outlets were located near schools, obesity rates were generally higher among children in all grade levels. Additional research is needed to better understand this finding, especially for children at higher risk of obesity, such as those from socio-economically disadvantaged populations. Food Packaging – PFAS are a group of more than 15,000 perfluoroalkyl and polyfluoroalkyl substances, a class of chemicals associated with harmful health effects, including liver damage, cancer, and impaired immunity. Due to wide-spread usage, PFAS are in the blood of nearly every American, according to the Centers for Disease Control and Prevention.Some PFAS have grease-repellent properties and were added to food packaging. A National Science Foundation study, in 2017, found PFAS coatings on 46% of food-wrap papers and 20% of paperboard containers collected from fast-food restaurants across the U.S. In a subsequent, related NIEHS-funded study, consumption of meals from fast food, and pizza and other restaurants, was generally associated with higher serum PFAS concentrations in people. In the same study, consumption of microwave popcorn was associated with significantly higher serum levels of certain PFAS chemicals. A 2024 study by the international Food Packaging Forum identified 68 PFAS in various food contact materials, including paper, plastic, and coated metal.In February 2024, FDA announced that grease-proofing materials containing certain PFAS are no longer being sold for use in food packaging in the U.S.Food Safety – Food safety studies funded by NIEHS include contaminants in common foods. In particular, arsenic, a metal-like element that can harm many human organs, presents a global food contamination problem.Researchers measured arsenic concentrations in several rice-based products. They found high levels of arsenic in brown rice syrup, a substitute for corn syrup in many foods including toddler formula. This discovery informed the Food and Drug Administration's Inorganic Arsenic in Rice Cereals for Infants: Action Level Draft Guidance for Industry and other federal actions and reports.The problem of contaminants in food led researchers funded by the Superfund Research Program to develop approaches for addressing soils used to grow crops. Some are working on phytoremediation approaches that are cost-effective and ecologically friendly. Phytoremediation is a process that uses fast-growing plants in engineered systems to degrade, extract, contain, or immobilize contaminants from soil or groundwater.One team is testing a species of a non-food crop plant called oilseed to absorb and concentrate arsenic in its stems and leaves. Once harvested, these plants could be safely destroyed through incineration. Then, the plan is for farmers to plant food crops in the soil remediated from arsenic. This project is ongoing through 2025. Food Gardening – The need for affordable, healthy foods has increased public interest in home, school, and community gardens. While urban gardens provide numerous benefits, soil contamination may be an issue. Some NIEHS-funded researchers have taken on safe urban gardening in their community engagement projects. Examples include:Intramural ResearchThe following large projects, conducted in-house at NIEHS, have research components that concern dietary patterns or nutrition. Agricultural Heath Study – More than 89,000 farmers and their spouses in Iowa and North Carolina have been involved in this study since 1993. The collaborative research effort involves investigators from NIEHS, National Cancer Institute, Environmental Protection Agency, and National Institute for Occupational Safety and Health. This research project includes a dietary survey. A list of published papers is organized by year. The Sister Study – From 2003 to 2009, more than 50,000 women across the U.S. and Puerto Rico, who were 35-74 years old and whose sister had breast cancer, joined this landmark research effort to find causes of breast cancer. Because of their shared environment, genes, and experiences, studying sisters provides a way to identify risk factors for breast cancer, which may lead to prevention. Participants complete health updates each year, which include dietary surveys. A list of published papers is organized by year. Infant Feeding & Early Development Puberty Study (IFED-2) – This research study is looking at what babies eat and how they grow, including hormonal changes, into adolescence. It will improve understanding of why some kids go through puberty earlier or later than others. The age when puberty starts may be linked to a person's future health. Nearly 1 in 5 people consume botanical supplements as part of their diet; however, adequate safety information may not be available for some botanical ingredients, according to the NIH Nutrition Research Report. At NIEHS, ongoing research within the Division of Translational Toxicology aims to discover information that will be useful to consumers, medical professionals, and regulatory authorities on botanical ingredient safety. Additionally, NIEHS plays a lead role in the Botanical Safety Consortium, a public–private partnership that evaluates the suitability of new methodologies used to assess complex botanical mixtures.  Further Reading Stories from the Environmental Factor (NIEHS Newsletter) Treating Gut Injuries Caused by Too Much Sugar Consumption (January 2025)Diet, Lifestyle, and PFAS: Abby Fleisch Tackles 'forever Chemicals' (December 2024)Folic Acid Reduces the Effect of Prenatal Lead Exposure on Autistic-like Behaviors in Children (December 2024)How a Father's Eating Patterns May Affect Future Generations (November 2024)Gene-Environment Insights, Diet's Role in Disease Kick Off New Series (November 2024)Diet and Exposures in Pregnancy: Grantee Tackles Research, Messaging (September 2023)Chemicals Formed in Well-done Cooked Meats May Be Risk Factors for Parkinson's (September 2023)Anticancer Effects of Dietary Methionine Depend on Immune Status (September 2023)Folate's Protective Effects May Now Extend to PFAS (July 2023)Baking Industry Food Additive Raises Red Flag, Expert Says (June 2023)Eating Fish While Pregnant: Benefits Outweigh Harms (June 2023)High-Fiber Diet May Protect Against Exposure to PFOS (April 2023)Precision Nutrition Improves Health at Individual Level, Expert Says (February 2023)Path to Food Safety Requires Multidisciplinary Approach, Experts Say (January 2023)Autism Researcher Focuses on Maternal Diet, Prenatal Exposures (October 2022)Diet holds key to slowing biological aging, researchers say (November 2021)Good Nutrition Can Help Counter Effects of Contaminants, Expert Says (September 2021)Printable Fact Sheets Podcasts Campaign Promotes Eating Safer Fish (2022) – The "Stop, Check, Enjoy!" campaign helps fishers in southeastern North Carolina understand the risks of consuming certain fish from the Cape Fear River.Botanical Safety (2021) – Cynthia Rider, Ph.D., a toxicologist at NIEHS, describes how certain botanical dietary supplements may affect health and how consumers can make informed decisions. Additional Resources Related Health Topics Skip to main content The cross-cutting unit on Safe, Healthy and Sustainable Diets coordinates and brings together relevant inputs from other units in the Department of Nutrition and Food Safety to strengthen the coherence and alignment of WHO's guidance, policy actions and provision of scientific advice and technical support to the Regional and Country Offices as well as to Member States and support the delivery of increased impact at the country level to achieve the 1 billion target of healthier populations. This Cross-Cutting Unit develops evidence-informed WHO guidance on: diet and health to reduce the burden of diet- and nutrition-related health problems, including obesity and diet-related NCDs; and policy actions to create enabling food environment which promotes safe, healthy, and sustainable diets, and technical tools, such as nutrient profile models for different policy applications,  to ensure WHO's guidance and support are solidly based on science. Dietary Guidelines for Americans The Dietary Guidelines for Americans (Dietary Guidelines) is the cornerstone for federal nutrition programs and a go-to resource for health professionals nationwide. The Dietary Guidelines provides food-based recommendations to promote health, help prevent diet-related chronic diseases, and meet nutrient needs. An official website of the United States government. Official websites use .gov A .gov website belongs to an official government organization in the United States. Secure .gov websites use HTTPS A lock ( ) or https:// means you've safely connected to the .gov website. Share sensitive information only on official, secure websites. Get tips to keep diabetes, heart disease, and other health problems under control through healthy eating and healthy living.