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AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES

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Typical Report Citation and Abstract

❶ **19970001126** NASA Langley Research Center, Hampton, VA USA
❷ **Water Tunnel Flow Visualization Study Through Poststall of 12 Novel Planform Shapes**
❸ Gatlin, Gregory M., NASA Langley Research Center, USA Neuhart, Dan H., Lockheed Engineering and Sciences Co., USA;
❹ Mar. 1996; 130p; In English
❺ Contract(s)/Grant(s): RTOP 505-68-70-04
❻ Report No(s): NASA-TM-4663; NAS 1.15:4663; L-17418; No Copyright; Avail: CASI; A07, Hardcopy; A02, Microfiche
❼ To determine the flow field characteristics of 12 planform geometries, a flow visualization investigation was conducted in the Langley 16- by 24-Inch Water Tunnel. Concepts studied included flat plate representations of diamond wings, twin bodies, double wings, cutout wing configurations, and serrated forebodies. The off-surface flow patterns were identified by injecting colored dyes from the model surface into the free-stream flow. These dyes generally were injected so that the localized vortical flow patterns were visualized. Photographs were obtained for angles of attack ranging from 10’ to 50’, and all investigations were conducted at a test section speed of 0.25 ft per sec. Results from the investigation indicate that the formation of strong vortices on highly swept forebodies can improve poststall lift characteristics; however, the asymmetric bursting of these vortices could produce substantial control problems. A wing cutout was found to significantly alter the position of the forebody vortex on the wing by shifting the vortex inboard. Serrated forebodies were found to effectively generate multiple vortices over the configuration. Vortices from 65’ swept forebody serrations tended to roll together, while vortices from 40’ swept serrations were more effective in generating additional lift caused by their more independent nature.
❽ Author
❾ *Water Tunnel Tests; Flow Visualization; Flow Distribution; Free Flow; Planforms; Wing Profiles; Aerodynamic Configurations*

Key

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AEROSPACE MEDICINE AND BIOLOGY

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MARCH 23, 1998

51
LIFE SCIENCES (GENERAL)

19980012098

Novel procedure for developing implicit solvation models for peptides and proteins

Baysal, Canan, Florida State Univ., USA; Meirovitch, Hagai; Journal of Physical Chemistry B; September 18, 1997; ISSN 1089-5647; Volume 101, no. 38, pp. 7368-7370; In English; Copyright; Avail: Issuing Activity

Solvation is an important factor in the structure stabilization of proteins. The free energy of solvation has been commonly approximated by summing the products of the atomic solvation parameters (ASPs) and the solvent accessible surface areas, where the ASPs were obtained from thermodynamic experiments of small molecules. This summation was usually added to the force field without calibration. We propose deriving an optimized set of ASPs only by requiring that the minimized total energy of the experimentally known structure is the global minimum. This method is applied to a cyclic hexapeptide in DMSO and can also be extended to loops in proteins in water.

Author (EI)

Proteins; Free Energy; Molecular Structure; Water

19980012099

Protein electric field effects on the CO stretch frequency of carbonmonoxycytochromes c as a function of carbonyl tilting and bending investigated with a continuum electrostatic approach

Laberge, Monique, Univ. of Pennsylvania, USA; Sharp, Kim A.; Vanderkooi, Jane M.; Journal of Physical Chemistry B; September 18, 1997; ISSN 1089-5647; Volume 101, no. 38, pp. 7364-7367; In English; Copyright; Avail: Issuing Activity

The effect of the orientation of CO bound to the heme of two c-type cytochromes on the CO-stretch frequency nu(sub CO) has been investigated using molecular mechanics and finite difference Poisson-Boltzmann calculations. Our approach treats the charge distribution of the protein as an external electric field capable of inducing Stark frequency shifts. Results show that modifying the Fe-C-O bending angle (beta) does not change the CO stretch frequency within a range of 100-175 deg, equivalent to a bending motion away from the propionic acid chains. The calculated Stark shifts range from 5.4 to 8.6 cm(sup -1) and are in good agreement with the experimentally observed shift (6 cm(sup -1)). However, motion of the CO toward the propionics exerts significant influence on the calculated shifts (-4.5 to -1.8 cm(sup -1)), which are then in total disagreement with experiment, not only in magnitude but also in predicting the wrong direction for the shift. The Stark shifts calculated for the tilt angle (tau) show that it has no significant effect on nu(sub CO) within a 15 deg distortion range. With respect to the proximal histidine displacement angle (omega), only a complete (and unlikely) 90 deg rotation about the Fe-N bond was effective in significantly affecting the Stark shift, and we accordingly rule out a major contribution to the CO distortion from the coordination geometry of the proximal histidine. Overall, the calculations show that the CO ligand could thus enjoy a significant amount of flexibility in the heme pocket - as required to approach and leave the heme group.

Author (EI)

Attitude (Inclination); Carbonyl Compounds; Electric Fields; Proteins; Carbon Monoxide; Electrostatics; Liquid Crystals

19980012892

Range estimation with a panoramic visual sensor

Chahl, J. S., Australian Natl. Univ., Australia; Srinivasan, M. V.; Journal of the Optical Society of America A: Optics and Image Science, and Vision; September, 1997; ISSN 0740-3232; Volume 14, no. 9, pp. 2144-2151; In English; Copyright; Avail: Issuing Activity

An estimation algorithm has been developed that delivers a panoramic range profile that is accurate to within 10% for ranges exceeding 100 times the separation of the sensor positions. When the system is fully implemented, with some of the suggested enhancements, its accuracy and practicality could be greatly improved. The accuracy and low computational overhead of the algorithm suggest applications for visually guided mobile robots.
EI
Image Analysis; Imagery; Measuring Instruments; Computer Vision; Interpolation; Algorithms

19980013248
Microbiological quality of bottled water
Fewtrell, L., Univ. of Leeds, UK; Kay, D.; Wyer, M.; Godfree, A.; O'Neill, G.; Water Science and Technology; 1997; ISSN 0273-1223; Volume 35, no. 11-12, pp. 47-53; In English; 1996 IAWQ 8th International Symposium on Health-related Water Microbiology, Oct. 6-10, 1996, Mallorca, Spain; Copyright; Avail: Issuing Activity

Bottled water is now the biggest selling soft drink in Europe (van Musschenbroek, 1995) with sales topping 700 million litres in 1994 in the UK alone (Natural Mineral Water Association, pers comm). As part of a wide ranging UK Department of the Environment Programme to assess possible risks from the consumption of drinking water from all sources, a survey of the microbiological quality of still bottled water, at the point of sale, was conducted. A total of 17 different brands of still water (both natural mineral and other bottled water) in a variety of different containers (plastic and glass, clear and colored) were tested for total colony counts at 22 C and 37 C, total coliforms, Escherichia coli, Pseudomonas aeruginosa, aeromonads, faecal streptococci and sulphite-reducing clostridia. Bottles were purchased from various suppliers in order to obtain a range of different sell by dates.
Author (EI)
Water Quality; Potable Water; Marketing; Minerals; Bacteriology; Water

19980014200
Binocular fiberscope for presenting visual stimuli during fMRI
Cornelissen, Frans W., Univ. of Groningen, Netherlands; Pelli, Denis G.; Farell, Bart; Huckins, Sean C.; Szeverenyi, Nikolaus M.; Spatial Vision; 1997; ISSN 0169-1015; Volume 11, no. 1, pp. 75-81; In English; Copyright; Avail: Issuing Activity

A binocular pair of fiberscopes relays high-resolution images of CRT displays from an adjacent room to an observer lying in a scanner in functional Magnetic Resonance Imaging (fMRI) studies of visual function. We review the problems that must be overcome by any visual display for use in fMRI, present the specific solution we developed, and discuss its merits. Together, the fiberscope and CRT conveniently display accurately controlled high- and low-contrast wide-field images to an observer in an fMRI scanner.
Author (EI)
Binocular Vision; High Resolution; Visual Stimuli; Imaging Techniques; Magnetic Resonance; Cathode Ray Tubes; Display Devices; Magnetic Fields

19980014366
Survival of Giardia, Cryptosporidium, poliovirus and Salmonella in marine waters
Johnson, D. C., Univ. of Arizona, USA; Enriquez, C. E.; Pepper, I. L.; Davis, T. L.; Gerba, C. P.; Rose, J. B.; Water Science and Technology; 1997; ISSN 0273-1223; Volume 35, no. 11-12, pp. 261-268; In English; 1996 IAWQ 8th International Symposium on Health-related Water Microbiology, Oct. 6-10, 1996, Mallorca, Spain; Copyright; Avail: Issuing Activity

Discharge of sewage into the ocean is still a common method of disposal worldwide. Both treated and untreated sewage may contain significant concentrations of waterborne pathogens, such as Giardia, Cryptosporidium, poliovirus and Salmonella. Limited studies exist on the survival of poliovirus and Salmonella in marine waters; however, almost no information exists on the survival of protozoan parasites in marine waters. This study examined the survival of Giardia muris cysts, Cryptosporidium parvum oocysts, poliovirus-1 and Salmonella typhimurium in marine waters. The survival of the microorganisms varied according to the presence of light, salinity and water quality (as determined by quantity of enterococci). All microorganisms survived longer in the dark than in sunlight, the order of survival in sunlight being: Cryptosporidium greater than poliovirus greater than Giardia greater than Salmonella.
Author (EI)
Bacteriology; Water; Microorganisms; Sea Water; Solar Radiation; Water Quality

19980014368

Abundance of bacteriophages of enteric bacteria in different freshwater environments

Araujo, R., Univ. of Barcelona, Spain; Lasobras, J.; Puig, A.; Lucena, F.; Jofre, J.; Water Science and Technology; 1997; ISSN 0273-1223; Volume 35, no. 11-12, pp. 125-128; In English; 1996 IAWQ 8th International Symposium on Health-related Water Microbiology, Oct. 6-10, 1996, Mallorca, Spain; Copyright; Avail: Issuing Activity

The abundances of somatic coliphages, F-specific phages and B. fragilis phages were measured in freshwater environments with different levels of faecal pollution. In samples with recent pollution of domestic origin the numbers of the three groups of phages were highly correlated. In this set of samples B. fragilis phages were significantly outnumbered by F-specific and these by somatic coliphages. In waters with intermediate levels of pollution, coliphages were more abundant than phages infecting B. fragilis. The levels of the three groups of phages, which were very low, were similar in waters with persistent faecal pollution indicating that B. fragilis phages were most resistant to natural inactivation processes.

Author (EI)

Fresh Water; Bacteriology; Water; Bacteriophages; Surface Water; Water Pollution; Water Quality

19980014369

Situational analysis of the microbial water quality in a peri-urban catchment in South Africa

Venter, S. N., CSIR, South Africa; Steynberg, M. C.; de Wet, C. M. E.; Hohls, D.; du Plessis, G.; Kfir, R.; Water Science and Technology; 1997; ISSN 0273-1223; Volume 35, no. 11-12, pp. 119-124; In English; 1996 IAWQ 8th International Symposium on Health-related Water Microbiology, Oct. 6-10, 1996, Mallorca, Spain; Copyright; Avail: Issuing Activity

A situational analysis of a peri-urban catchment experiencing microbial water quality problems was carried out using data collected over two and a half years. The water and land use in the area was determined. The main sources of pollution were identified and the effects of dilution and bacterial die-off on water quality were evaluated by modelling the level of faecal coliforms along the length of the river using the QUAL2E model. As a result of the assessment, water quality goals were set for the catchment and suggestions were made for the improvement of microbial quality. Certain areas of the catchment are densely populated and both developed and informal settlements exist. Water is mainly used for domestic and recreational purposes. The river receives diffuse source discharges as well as point source discharges from four wastewater treatment plants and an industrial site. Assessment of indicator organism and pathogen analyses indicated that the main factors affecting the microbial quality were discharges from the sewage plants and runoff from informal settlement areas. The industrial activities in the catchment did not have a major effect. Modelling runs predicting faecal coliform levels demonstrated that bacterial die-off did not result in a significant improvement to the microbial water quality in the catchment.

Author (EI)

Republic of South Africa; Water Quality; Bacteriology; Water; Project Management; Land Use; Water Pollution

19980014370

Photocatalytic bactericidal activity of TiO(sub 2) in aqueous suspensions of E. coli

Bekbolet, M., Bogazici Univ., Turkey; Water Science and Technology; 1997; ISSN 0273-1223; Volume 35, no. 11-12, pp. 95-100; In English; 1996 IAWQ 8th International Symposium on Health-related Water Microbiology, Oct. 6-10, 1996, Mallorca, Spain; Copyright; Avail: Issuing Activity

Aqueous suspensions of Escherichia coli and TiO(sub 2) (anatase) were irradiated with a BLF lamp (320nm less than lambda less than 420nm). The inactivation rate for an initial E. coli level of 10(sup 3) cells/mL was 1.78 x 10(sup -2)/min for light intsity of 67.9 mu E/s.m(sup 2) in the presence of 1mg/mL TiO(sub 2). Optimum TiO(sub 2) loading and the effect of light intensity are also reported.

Author (EI)

Bacteriology; Water; Photochemical Reactions; Oxidation; Catalysis; Bacteria

19980014373

Microbiology of the space shuttle water system

Koenig, D. W., KRUG Life Sciences, USA; Pierson, D. L.; Water Science and Technology; 1997; ISSN 0273-1223; Volume 35, no. 11-12, pp. 59-64; In English; 1996 IAWQ 8th International Symposium on Health-related Water Microbiology, Oct. 6-10, 1996, Mallorca, Spain; Copyright; Avail: Issuing Activity

The Space Shuttle has a once-through water system that is initially filled on the ground, partially drained before launch and then refilled with fuel-cell generated water on orbit. The microbiological standard for the Space Shuttle potable water system during this study period allowed only 1 microbe of any kind per 100mL and no detectable coliforms. Contamination episodes in more than 15 years of Shuttle operation have been rare; however, for the past 24 missions, bacterial contamination has been detected

in 33% of the samples collected 3d before launch. These samples have had on average 55CFU/100mL of bacteria, with the median less than 1CFU/100mL. Burkholderia cepacia has been the primary contaminant of the Shuttle water supply system both before and after flight. Water samples assessed during the STS-70 mission aboard the Space Shuttle Discovery were found to be contaminated (less than 20CFU/100mL) with B. cepacia and B. pickettii. In 1991, waste and water lines were removed from the Space Shuttle Columbia and the waste lines were found to harbor biofilms containing Bacillus spp. Nevertheless, the water systems of the four Space Shuttle vehicles provide extremely pure water.
Author (EI)
Space Shuttles; Bacteriology; Water; Water Resources; Water Quality; Standards

19980014374
Waterborne Campylobacter in Sweden: the cost of an outbreak
Andersson, Y., Swedish Inst. for Infectious Disease Control, Sweden; de Jong, B.; Studahl, A.; Water Science and Technology; 1997; ISSN 0273-1223; Volume 35, no. 11-12, pp. 11-14; In English; 1996 IAWQ 8th International Symposium on Health-related Water Microbiology, Oct. 6-10, 1996, Mallorca, Spain; Copyright; Avail: Issuing Activity

Outbreaks of waterborne disease happen in Sweden, as in most other countries. During the period 1980-1995, a total of 90 outbreaks were reported, involving about 50,000 sick people and two deaths. About 80% of the outbreaks are caused by unknown agents but Campylobacter is the most common agent. Between 1980 and 1995, 11 campylobacteriosis outbreaks were reported, three of which had 1,000yields 3,000 sick people involved. These waterborne outbreaks cost society, the water-treatment plant involved and the sick person a lot of money. A waterborne outbreak also raises the question whether people can have confidence in the community tap water.
Author (EI)
Bacteriology; Water; Potable Water; Costs; Social Factors; Economics

19980014571 Institute of Nuclear Chemistry and Technology, Warsaw, Poland
Devising of the method for the determination of small and very small amounts of cadmium in biological materials by radiochemical version of neutron activation analysis
Dybczynski, Rajmund, Institute of Nuclear Chemistry and Technology, Poland; Samczynski, Zbigniew, Institute of Nuclear Chemistry and Technology, Poland; 1996; ISSN 1425-7351; 15p; In English
Report No.(s): INCT-4/B/96; DE97-621489; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

The newly modified version of the method for the determination of cadmium in biological materials by radiochemical Neutron Activation Analysis (NAA) based on selective post irradiation separation of Cd using ion exchange resin Retardion 11A8 is presented. The conditions necessary for the selective retaining of Cd on the column exploiting both anionic and cationic ion exchange function of the resin have been discussed. Depending on the composition of the external solution, cadmium existing in the form of either anionic chloride complexes or cationic amine species is taken up by quaternary ammonium or carboxylate functional groups, respectively while accompanying elements are eluted. The elaborated method was further verified by determine Cd content in several certified biological reference materials using neutron activation analysis. The ion exchange separation procedure assures very high radiochemical purity of the cadmium fraction. Decontamination factors obtained for Mo, Sb, Na, Zn, Co, Sc amounted to 10(exp 3) - 10(exp 6). Detection limit for Cd was 0.5 (micro)g/kg. Analytical results show good agreement with the certified values.
DOE
Technologies; Cadmium; Ion Exchange Resins; Neutron Activation Analysis; Bioassay

19980015375 North Carolina State Univ., Dept. of Microbiology, Raleigh, NC USA
Assessment of the Essentiality of ERG Genes Late in Ergosterol Biosynthesis in Saccharomyces Cerevisiae
Parks, Leo W., North Carolina State Univ., USA; Tove, Shirley, North Carolina State Univ., USA; Palmermo, Lizette M., North Carolina State Univ., USA; Leak, Frank W., North Carolina State Univ., USA; Oct. 1997; 24p; In English
Contract(s)/Grant(s): DAAH04-93-D-0003
Report No.(s): AD-A332304; ARO-33043.1-LS; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

Fungal biodegradation accounts for enormous damage to stored material through degradation and the production of secondary metabolites. We are seeking to identify reactions that are essential to the survival of fungi. Those involved in sterol biosynthesis have been shown to be required for cell growth and amenable to control by antifungal compounds. We have shown that interconversion of sterols between free and esterified forms maintains the basic level of free sterols. We have identified two conditional mutants that have a defect in sterol esterification which is attendant to inhibition of cell growth. Additional experiments

used mutations in the structural genes for ergosterol biosynthesis to assess their essentiality for the fungi. Further work under another contract addresses the influence of sterol alterations on the regulation of gene expression in sterol biosynthesis.
DTIC
Biosynthesis; Fungi; Biodegradation

19980015613 Department of Health and Human Services, National Toxicology Program, Research Triangle Park, NC USA
NTP Summary Report on the Metabolism, Disposition, and Toxicity of 1,4-Butanediol (CAS No. 110-63-4)
Irwin, R. D., Department of Health and Human Services, USA; May 1996; 44p; In English
Report No.(s): PB97-108161; NIH/PUB-96-3932; NTP-TOXICITY-SER-54; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

1,4-Butanediol is an industrial chemical used in the manufacture of other organic chemicals. It was nominated by the National Cancer Institute and selected for evaluation by the NTP because of high production volume, the potential for worker exposure, the lack of adequate toxicological characterization, and the lack of evaluation for carcinogenic potential. As documented in the scientific literature, 1,4-butanediol is rapidly absorbed and metabolized to gamma-hydroxybutyric acid in animals and humans. A metabolism and disposition study conducted in F344/N rats by the NTP confirmed the rapid and extensive conversion of 1/(14C)-1,4-butanediol to 14CO2. Because of this rapid and extensive conversion, the toxicological profile of 1,4-butanediol reflects that of gamma-hydroxybutyric acid. gamma-Hydroxybutyric acid is a naturally occurring chemical found in the brain and peripheral tissues which is converted to succinate and processed through the tricarboxylic acid cycle.
NTIS
Toxicity; Metabolism; Chemical Tests; Butanes

19980015631 York Univ., UK
Toughening Mechanisms in Biological Hard Tissues ***Final Report, May 1991 - May 1994***
Currey, John D., York Univ., UK; Feb. 1995; 6p; In English
Contract(s)/Grant(s): AF-AFOSR-0204-91; AF Proj. 2302; AF Proj. 2303
Report No.(s): AD-A329771; AFOSR-97-0490TR; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

We have studied toughening mechanisms in mineralised tissues. We have demonstrated the importance of microdamage as a universal toughening mechanism. This is clear from all the mineralised tissues we have examined. The tougher tissues have a variety of mechanisms to increase elongation before fracture, and these are rather different in antler and in dentine. (Antler has fibers that behave telescopically and also has a structure that forces microcracks to depart from the most dangerous orientation; dentine has a structure that initially induces yield at 450 to the loading direction, whatever that is, but at higher strains induces clouds of microcracks in the direction of the loading, and finally the macrocrack is diverted by the predominant fiber direction.) We have examined such toughening mechanisms by a combination of mechanical testing, (including static, impact and fatigue loading) optical examination, scanning confocal microscopy, acoustic emission, fractal analysis of fracture surfaces, and some finite element analysis. The work on the grant has resulted in 5 papers published or in press in refereed journals, two chapters in books published or in press, and one large paper (on fatigue) which has just been submitted. We expect two more papers based on AFOSR work to appear.
DTIC
Acoustic Emission; Crack Propagation; Cracks; Fiber Orientation; Finite Element Method; Presses; Static Loads; Tissues (Biology)

19980016195
On the sequential determination on model misfit
Whaite, Peter, McGill Univ., Canada; Ferrie, Frank P.; IEEE Transactions on Pattern Analysis and Machine Intelligence; August, 1997; ISSN 0162-8828; Volume 19, no. 8, pp. 899-905; In English; Copyright; Avail: Issuing Activity

Many strategies in computer vision assume the existence of general purpose models that can be used to characterize a scene or environment at various levels of abstraction. The usual assumptions are that a selected model is competent to describe a particular attribute and that the parameters of this model can be estimated by interpreting the input data in an appropriate manner (e.g., location of lines and edges, segmentation into parts or regions, etc.). This paper considers the problem of how to determine when those assumptions break down. The traditional approach is to use statistical misfit measures based on an assumed sensor noise model. The problem is that correct operation often depends critically on the correctness of the noise model. Instead, we show how

this can be accomplished with a minimum of a priori knowledge and within the framework of an active approach which builds a description of environment structure and noise over several viewpoints.
Author (EI)
Computer Vision; Statistical Analysis; Parameter Identification; Random Signals; Error Analysis

19980016539
General formalism for Metabolic Control Analysis
Ehlde, Magnus, Univ. of Lund, Sweden; Zacchi, Guido; Chemical Engineering Science; August, 1997; ISSN 0009-2509; Volume 52, no. 15, pp. 2599-2606; In English; Copyright; Avail: Issuing Activity

A general formalism for Metabolic Control Analysis is derived using general sensitivity analysis and structural information of the metabolic pathway inherent in the stoichiometry matrix. The equations derived provide a general procedure for calculating the control coefficients from the elasticity coefficients using matrix algebra, and is valid for any pathway stoichiometry. The procedure diminishes the risk of deriving erroneous relations and is, due to its generality, well suited for computer handling. The formalism is mathematically stringent and is a complement to the original theorems of Metabolic Control Analysis, which were derived using ad hoc reasoning.
Author (EI)
Elastic Properties; Metabolism; Sensitivity; Stoichiometry; Matrix Theory

19980016683 Florida State Univ., Tallahassee, FL USA
Electrophysiological Properties of Intrinsic Circadian Oscillators in the Chick Pineal Gland ***Final Report***
Dryer, Stuart E., Florida State Univ., USA; Jan. 1997; 15p; In English
Contract(s)/Grant(s): F49629-93-I-0303; AF Proj. 2312
Report No.(s): AD-A329751; AFOSR-TR-97-0415; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

Photoreceptors of the chick pineal are one of the only vertebrate intrinsic circadian oscillators amenable to cellular analysis. We characterized the electrophysiological properties of these cells using patch clamp and fura-2 recording techniques. We analyzed several types of voltage-and cGMP-activated ionic channels, and obtained evidence that cGMP-activated channels participate in phototransduction. We also examined intracellular Ca(2+) dynamics and obtained evidence for the existence of intracellular Ca(2+) stores and Ca(2+) oscillations that can be mobilized by drugs and hormones that increase cAMP and promote melatonin secretion. Norepinephrine, which inhibits melatonin secretion, had no effect on Ca(2+) dynamics. Most importantly, we discovered a new type of ionic channel, ILOT, whose gating is under direct circadian control. ILOT is permeable to Ca(2+), but its gating is not controlled by membrane potential or intracellular ligands. ILOT has unusual kinetic properties, as it can stay open for seconds at a time. This feature is not seen in other types of ionic channels. ILOT is only active in the nighttime, even in pineal cells free-running in constant-dark conditions. ILOT is also present in chick retinal photoreceptors, which also contain a circadian oscillator. ILOT therefore represents a logical target for pharmacological manipulation of circadian output.
DTIC
Circadian Rhythms; Pineal Gland; Electrophysiology; Cells (Biology); Photoreceptors; Vertebrates

19980016846 Department of Health and Human Services, National Toxicology Program, Research Triangle Park, NC USA
NTP Technical Report on Toxicity Studies of Urethane in Drinking Water and Urethane in 5 percent Ethanol Administered to F344/N Rats and B6C3F1 Mice
Chan, P. C., Department of Health and Human Services, USA; Mar. 1996; 147p; In English
Report No.(s): PB96-175575; NIH/Pub-96-3937; NTP-Toxicity-Ser-52; No Copyright; Avail: CASI; A07, Hardcopy; A02, Microfiche

Urethane, a byproduct of fermentation found in alcoholic beverages, is carcinogenic in rodents and is classified by the International Agency for Research on Cancer as a possible human carcinogen. The USA Food and Drug Administration nominated urethane for study because of the widespread exposure of humans through the consumption of fermented foods and beverages and because of a lack of adequate dose-response data about the carcinogenicity of urethane with and without the coadministration of ethanol. Comparative studies of urethane in drinking water and in 5% ethanol were conducted to investigate possible effects of ethanol on urethane toxicity. Toxicokinetic studies of urethane in drinking water and in 5% ethanol and genetic toxicity studies of urethane in vivo and in vitro were also conducted.
NTIS
Toxicity; Carcinogens; Fermentation; Ethyl Alcohol; Potable Water; Urethanes; Cancer

19980016847 NERAC, Inc., Tolland, CT USA

Aquaculture: Algae. (Latest citations from the Life Sciences Collection Database)

Apr. 1996; In English

Report No.(s): PB96-867510; Copyright Waived; Avail: Issuing Activity (Natl Technical Information Service (NTIS)), Microfiche

The bibliography contains citations concerning the commercial cultivation of algae as a facet of aquaculture. Topics include descriptions and characteristics of algal species, environmental variables affecting productivity, nutritional aspects, infestation and disease, genetic manipulation, and production technology. End product applications examine algae as biomass for energy production, food source for humans, animal feed source, and a source for chemical by-products such as chlorophylls. Harvesting of algae as a source of single-celled protein is referenced in a related bibliography. (Contains 50-250 citations and includes a subject term index and title list.)

NTIS

Bibliographies; Aquiculture; Algae

19980016862 National Inst. of Environmental Health Sciences, National Toxicology Program, Research Triangle Park, NC USA

NTP Technical Report on the One-Year Initiation/Promotion Study of o-Benzyl-p-Chlorophenol (CAS No. 120-32-1) in Swiss (CD-1 (Trade Name)) Mice (Mouse Skin Study), *series*

May 1995; 131p; In English

Report No.(s): PB96-162342; NTP-TR-444; NIH/PUB-95-3157; No Copyright; Avail: CASI; A07, Hardcopy; A02, Microfiche

Toxicology and carcinogenicity studies were conducted by dermal administration of o-benzyl-p-chlorophenol to groups of 50 Swiss (CD-1) mice of each sex to study its effect as an initiator, promoter, and complete carcinogen. Under the conditions of the 1-year mouse skin initiation/promotion study in Swiss (CD-1) mice, o-benzyl-p-chlorophenolwas a cutaneous irritant and a weak skin tumor promoter relative to strong promoters such as 12-O-tetradecanoylp horbol-12-acetate. o-Benzyl-p-chlorophenol has no activity as an initiator or as a completecarcinogen.

NTIS

Chlorofluorocarbons; Toxicology; Benzene; Carcinogens

19980016871 National Inst. of Environmental Health Sciences, National Toxicology Program, Research Triangle Park, NC USA

NTP Technical Report on the Toxicology and Carcinogenesis Studies of Benzethonium Chloride (CAS No. 121-54-0) in F344/N Rats and B6C3F1 Mice (Dermal Studies), *series*

Jul. 1995; 211p; In English

Report No.(s): PB96-162300; NTP-TR-438; NIH/PUB-95-3169; No Copyright; Avail: CASI; A10, Hardcopy; A03, Microfiche

Toxicology and carcinogenicity studies were conducted by dermal administration of benzethonium chloride to groups of 60 F344/N rats and 60 B6C3F1 mice of each sex at doses of 0, 0.15, 0.5, or 1.5 mg/kg body weight. Benzethonium chloride was administered to rats in ethanol 5 days per week and doses were adjusted weekly according to the average body weights of the groups. Under the conditions of these 2 year dermal studies, there was no evidence of carcinogenic activity of benzethonium chloride in male or female F344/N rats or in male or female B6C3F1 mice. Exposure of rats and mice to benzethonium chloride by dermal application in ethanol for 2 years resulted in epithelial hyperplasia in male and female rats and mice and sebaceous gland hyperplasia and ulcers in female rats at the site of application.

NTIS

Carcinogens; Sebaceous Glands; Skin (Anatomy); Toxicology

19980016888 National Inst. of Environmental Health Sciences, National Toxicology Program, Research Triangle Park, NC USA

Toxicology and Carcinogenesis Studies of Methylphenidate Hydrochloride (CAS No. 298-59-9) in F344/N Rats and B6C3F1 Mice (Feed Studies), *series*

Jul. 1995; 299p; In English

Report No.(s): PB96-162615; NTP-TR-439; NIH/PUB-95-3355; No Copyright; Avail: CASI; A13, Hardcopy; A03, Microfiche

Toxicology and carcinogenicity studies were conducted by administration of methylphenidate hydrochloride in feed to groups of 70 F344/N rats of each sex at doses of 0, 100, 500, or 1,0000 ppm and to groups of 70 B6C3F1 mice of each sex at doses of 0, 50, 250, or 500 ppm. Under the conditions of these 2-year feed studies, there was no evidence of carcinogenic activity of methylphenidate hydrochloride in male or female F344/N rats receiving 100, 500, or 1,000 ppm. There was some evidence of carcinogenic activity in male and female B6C3F1 mice, based on the occurrence of hepatocellular neoplasms. Treatment of female rats with methylphenidate hydrochloride was associated with a decrease in the incidence of mammary gland fibroadenomas. Ad-

ministration of methylphenidate hydrochloride to male and female mice resulted in increased incidence of eosinophilic foci in the liver.
NTIS
Carcinogens; Hydrochlorides; Toxicology; Mammary Glands; Neoplasms

19980016890 National Inst. of Environmental Health Sciences, National Toxicology Program, Research Triangle Park, NC USA
Toxicology and Carcinogenesis Studies of Diethylphthalate (CAS No. 84-66-2) in F344/N Rats and B6C3F1 Mice (Dermal Studies) with Dermal Initiation/Promotion Study of Diethylphthalate and Dimethylphthalate (CAS No. 131-11-3) in Male Swiss (CD-1 (Trade
May 1995; 274p; In English
Report No.(s): PB96-162276; NIH/PUB-95-3356; NTP-TR-429; No Copyright; Avail: CASI; A12, Hardcopy; A03, Microfiche
Toxicology and carcinogenicity studies were conducted by dermal administration of diethylphthalate to groups of 60 F344/N rats of each sex at doses of 0, 100, or 300 microL and to groups of 60 B6C3F1 mice of each sex at doses of 0, 7.5, 15, or 30 microL. Neat chemical was applied to rats for 5 days per week for 103 weeks and up to 10 animals per group were evaluated after 15 months. Mice received doses in 100 microL of acetone for 5 days per weeks for 103 weeks with a 1 week recovery period, and up to 10 animals per group were evaluated after 15 months. Under the conditions of these 2-year dermal studies, there was not evidence of carcinogenic activity of diethylphthalate in male or female F344/N rats receiving 100 or 300 microL. There was equivocal evidence of carcinogenic activity of diethylphthalate in male and female B6C3F1 mice based on increased incidences of hepatocellular neoplasms, primarily adenomas. In the initiation/promotion model, there was no evidence of initiating or promoting activity of diethylphthalate or dimethylphthalate in male Swiss (CD-1) mice.
NTIS
Phthalates; Toxicology; Carcinogens; Acetone; Neoplasms; Skin (Anatomy)

19980016896 National Inst. of Environmental Health Sciences, National Toxicology Program, Research Triangle Park, NC USA
NTP Technical Report on the Toxicology and Carcinogenesis Studies of t-Butyl Alcohol (CAS No. 75-65-0) in F344/N Rats and B6C3F1 Mice (Drinking Water Studies), *series*
May 1995; 305p; In English
Report No.(s): PB96-162748; NTP-TR-436; NIH/PUB-95-3167; No Copyright; Avail: CASI; A14, Hardcopy; A03, Microfiche
Toxicology and carcinogenicity studies were conducted by administration of t butyl alcohol in drinking water to groups of 60 F344/N rats of each sex at doses of 0, 1.25, 2.5, or 5 mg/mL for males and 0, 2.5, 5, or 10 mg/mL for females. Groups of 60 B6C3F1 mice of each sex received t-butyl alcohol in drinking water at doses of 0, 5, 10, or 20 mg/mL. Under the conditions of these 2-year drinking water studies, there was some evidence of carcinogenic activity of t butyl alcohol in male F344/N rats based on increased incidences of renal tubule adenoma or carcinoma (combined). There was no evidence of carcinogenic activity of t butyl alcohol in female F244/N rats receiving 2.5, 5 or 10 mg/mL. There was equivocal evidence of carcinogenic activity in male B6C3F1 mice based on marginally increased incidences of follicular cell adenoma or carcinoma (combined) of the thyroid gland. There was some evidence of carcinogenic activity of t-butyl alcohol in female B6C3F1 mice based on increased incidences of follicular cell adenoma of the thyroid gland.
NTIS
Carcinogens; Potable Water; Radicals; Thyroid Gland; Toxicology

19980016900 New York Univ., Medical Center, Tuxedo, NY USA
Suppression of Lymphocyte Signal Transduction by Oxygen Intermediates *Annual Report*
Flescher, Eliezer, New York Univ., USA; Oct. 1997; 53p; In English
Contract(s)/Grant(s): DAMD17-95-I-5058
Report No.(s): AD-A333384; No Copyright; Avail: CASI; A04, Hardcopy; A01, Microfiche
Effects of different types of Oxidative Stress (OS) on cellular anti-oxidant mechanisms were compared. Human blood lymphocytes were subjected to: (1) acute exposure to H2O2; (2) chronic exposure to H2O2; (3) ionizing radiation. Enhanced catalase activity was detected in human peripheral blood T lymphocytes exposed to oxidative stress. Glutathione peroxidase activity and reduced glutathione, vitamin C and vitamin E levels, were not modulated by oxidative stress. Only exposure to hydrogen peroxide at 20 micrometer did not enhance catalase activity in T lymphocytes.
DTIC
Lymphocytes; Signal Transmission; Transducers; Oxidation

52
AEROSPACE MEDICINE

Includes physiological factors; biological effects of radiation; and effects of weightlessness on man and animals.

19980012819
Computational approach applied to the design and structural verification of a trileaflet polymeric heart valve
Di Martino, E., Politecnico di Milano, Italy; Pietrabissa, R.; Mantero, S.; Advances in Engineering Software; August, 1997; ISSN 0965-9978; Volume 28, no. 6, pp. 341-346; In English; Copyright; Avail: Issuing Activity

This study represents an application of the computational methods to the design and structural verification of a cardiac trileaflet polymeric valve. Numerical methods are commonly used for mechanic, fluid dynamic and thermal preliminary testing of engineering devices. In this paper commercial codes have been used to design and analyse a device which operates in contact with a biologic environment. Several simplifications are necessary to fulfill this aim due to the actual characteristics of the material, loads and boundary conditions. Six 3-D valve models have been developed and their mechanic behavior compared. The results allow an evaluation of the method that has been adopted and of the simplifications imposed. The method can be used to solve biomedical engineering problems though it requires an accurate description of the geometric and operating characteristics of both the device and its environment together with a critical evaluation of the results.
Author (EI)
Heart Valves; Computation; Numerical Analysis; Boundary Conditions

19980014218 NERAC, Inc., Tolland, CT USA
Hydrogels in Medicine. (Latest Citations from the US Patent Bibliographic File with Exemplary Claims)
Feb. 1996; In English; Page count unavailable.
Report No.(s): PB96-854922; Copyright Waived; Avail: Issuing Activity (Natl Technical Information Service (NTIS)), Microfiche

The bibliography contains citations of selected patents concerning hydrogels or hydrophilic polymers. References cite technological innovations for the application, preparation, and characterization of hydrogels. Citations focus on drug release and implants. (Contains 50-250 citations and includes a subject term index and title list.)
NTIS
Bibliographies; Gels; Polymers; Drugs

19980014568 National Defence Research Establishment, Avedelningen foer NBC Skydd, Umea, Sweden
Pesticide Fire: A Human Health Hazard? Toxicological Assessment of Pesticide Pyrolysis Products
Magnusson, B., National Defence Research Establishment, Sweden; Aug. 1996; 36p; In English
Report No.(s): PB97-164792; FOA-R-96-00273-4.9-SE; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

The intention of the present work is to evaluate the toxic health effects in humans from the formed pyrolysis products and to compare the results with the parental warehouse chemicals. The report will also give a propose of procedure for a toxicological assessment. In this study consideration is given to toxicological effects in humans after inhalation exposure to toxic substances from pyrolysis. The results disclose hazards of lethal injury within a considerable area downwind the pesticide fire. The pyrolysis scenario represents a fire where approximately 1/3 of the chemicals are released unchanged in the air and 1/3 are totally decomposed to yield new toxic products. Some of the pesticides were altered by heating to more toxic analogues.
NTIS
Pyrolysis; Respiration; Toxicity; Wind Direction

19980015147 Hahnemann Medical Coll. and Hospital, Dept. of Anatomy, Philadelphia, PA USA
Cerebellar Circuit Mechanisms Which Accompany Coordinated Limb Trajectory Patterns in the Rat: Use of a Model of Spontaneous Changes ***Final Report, 15 Feb. 1993 - 14 Feb. 1997***
Smith, Sherry, Hahnemann Medical Coll. and Hospital, USA; Feb. 1997; 4p; In English
Contract(s)/Grant(s): F49620-93-I-0136; AF Proj. 2312
Report No.(s): AD-A329702; AFOSR-TR-97-0506; No Copyright; Avail: CASI; A01, Hardcopy; A01, Microfiche

This project was designed to evaluate the effect of estrous hormones on function of the olivo-cerebellar circuitry in association with improved motor performance. Towards this end rats were chronically implanted with arrays of microwires to record from the dorsal accessory olive (rDAO) and its target, Purkinje cells in the paravermal cerebellum. In many cases, simultaneous recordings were carried out from as many as 48 neurons in both areas during tredmill locomotion tasks used to evaluate concomitant sensorimotor performance. The justification for these studies comes from the findings that elevations in endogenous estrous hor-

mones across the estrous cycle are associated with marked improvements in limb trajectory. Our fundings suggest that the ability of a rat to maintain treadmill position on a variable speed treadmill paradigm is improved on the night of behavioral estrus, following elevations in both estrous hormones, estradiol and progesterone.
DTIC
Cerebellum; Cerebral Cortex; Sensorimotor Performance; Targets; Trajectories; Treadmills

19980015214 NERAC, Inc., Tolland, CT USA
Hypothermia. (Latest Citations from the NTIS Bibliographic Database)
Mar. 1996; In English; Page count unavailable.
Report No.(s): PB96-864657; Copyright Waived; Avail: Issuing Activity (Natl Technical Information Service (NTIS)), Microfiche

The bibliography contains citations concerning cold stress, cold tolerance, thermal homeostasis, thermoregulation, physiological effects, exposure, and cold water immersion in reference to hypothermia. Antiexposure equipment, cold weather training, and winter survival in emergency situations are discussed. Drug antidotes, prophylaxis, and microwave irradiation for cold injury syndrome are also presented.
NTIS
Bibliographies; Stress (Physiology); Hypothermia; Cold Tolerance; Homeostasis

19980015348 Stanford Univ., Dept. of Computer Science, Stanford, CA USA
Construction of Normative Decision Models Using Abstract Graph Grammars
Egar, J. W., Stanford Univ., USA; Mar. 1994; 247p; In English
Contract(s)/Grant(s): NLM-LM-05157; NLM-LM-07033; NLM-LM-05208; NLM-LM-05305
Report No.(s): Stan-CS-TR-94-1513; KSL-94-17; Copyright Waived; Avail: CASI; A11, Hardcopy; A03, Microfiche

This dissertation addresses automated assistance for decision analysis in medicine. In particular, I have investigated graph grammars as a representation for encoding how decision-theoretic models can be constructed from an unordered list of concerns. The modeling system that I have used requires a standard vocabulary to generate decision models, the models generated are qualitative, and require subsequent assessment of probabilities and utility values. This research has focused on the modeling of the qualitative structure of problems given a standard vocabulary and given that subsequent assessment of probabilities and utilities is possible. The usefulness of the graph-grammar representation depends on the graph-grammar formalism's ability to describe a broad spectrum of qualitative decision models, on its ability to maintain a high quality in the models it generates, and on its clarity in describing topological constraints to researchers who design and maintain the actual grammar. I have found that graph grammars can be used to generate automatically decision models that are comparable to those produced by decision analysis.
Author
Decision Making; Probability Theory; Computer Systems Programs

19980015400 Iowa Univ., Dept. of Internal Medicine, Iowa City, IA USA
Grain Dust Exposure: Physiologic and Biologic Correlates *Final Report*
Jagielo, P. J., Iowa Univ., USA; Schwartz, D. A., Iowa Univ., USA; 1996; 6p; In English
Report No.(s): PB97-207062; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

Studies were conducted to determine whether inhalation of aqueous grain dust extract causes inflammation primarily localized in the airways and is associated with airflow obstruction; to determine how host factors such as age, and atopic status modulate the duration, intensity, and severity of these effects; and to study the results of repeated exposure in relation to physiologic and biologic tolerance. These studies demonstrated that extracts of grain dust are biologically active, able to produce acute physiologic changes as well as cause acute airway inflammation. Individuals exposed to grain dust during the handling or processing of grain are therefore at increased risk for the development of acute airflow obstruction and airway inflammation if exposed to significant levels of the dust. Acute physiologic and inflammatory responses following grain dust inhalation were associated with the concentration of endotoxin contained in the bioaerosol. The authors suggest therefore that it may be more important to monitor airborne levels of endotoxin in the work setting rather than total dust levels to minimize the risk of airway injury due to grain dust. While atopy alone plays a minor role in the development of grain dust induced airway disease, bronchial hyperreactivity as a host factor significantly affects the physiologic and biologic response to grain dust.
NTIS
Activity (Biology); Biological Effects; Physiology; Physiological Responses

19980015428 McMaster Univ., Hamilton, Ontario Canada

Tenth Biennial Hypoxia Symposium ***Final Report***

Houston, Charles S., Editor, McMaster Univ., Canada; Coates, Geoffrey, Editor, McMaster Univ., Canada; Oct. 1997; 341p; In English; 10th; Biennial Hypoxia Symposium, 18-22 Feb. 1997, Lake Louise, Canada

Contract(s)/Grant(s): DAMD17-96-I-6307

Report No.(s): AD-A330864; No Copyright; Avail: Issuing Activity (Defense Technical Information Center (DTIC)), Microfiche

Proceedings of a Symposium on Hypoxia: Women at Altitude. Some topics include: Women, Exercise and Acute Mountain Sickness; Hypoxic Life at the Bottom of the Sea; the Regulatory Role of Myoglobin in Myocardium; Hypoxia and Air Travel; Base HACE: An Introduction; Cerebral Hemodynamics and High Altitude Cerebral Edema; etc.

DTIC

Air Transportation; Altitude Sickness; Hemodynamics; High Altitude; Myocardium; Myoglobin; Physical Exercise

19980015438 Armed Forces Inst. of Pathology, Washington, DC USA

Retrospective Study of HIV Infection in Human Tissues ***Final Report, 1 Apr. 1992 - 30 Mar. 1997***

Nelson, Ann M., Armed Forces Inst. of Pathology, USA; Apr. 1997; 7p; In English

Contract(s)/Grant(s): MIPR-92MM2550

Report No.(s): AD-A330526; No Copyright; Avail: CASI; A02, Hardcopy; A01, Microfiche

To seek, review identify, and retrieve repository materials (slides, blocks, wet tissues, and information) of cases fulfilling the CDC definition of AIDS in the absence of demonstrable HIV infection Identify cases for potential use in basic research on the chronology of HIV retro viral infection in human tissues.

DTIC

Infectious Diseases; Viral Diseases; Human Immunodeficiency Virus; Immunology; Immune Systems

19980015645 Society for Research on Biological Rhythms, Charlottesville, VA USA

Fifth Meeting of Society for Research on Biological Rhythms ***Final Report, 1 Mar. 1996 - 28 Feb. 1997***

Zuker, Irving, Society for Research on Biological Rhythms, USA; Feb. 1997; 11p; In English

Contract(s)/Grant(s): F49620-96-I-0054; AF Proj. 2312

Report No.(s): AD-A330647; AFOSR-0540; AFOSR-97-0540TR; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

Among the features of the meeting worthy of note are the first time appearance of tutorial sessions for graduate and postdoctoral fellows as well as investigators interested in entering new fields of inquiry. At the 1996 meeting the formal models used in chronobiology were enunciated as well the principles of photobiolgy and the use of genetic and molecular approaches that have come to play an important part in this field. A second innovation was the 'news at 4' feature in which program chairs presented brief synopses of the high points of their sessons. Because there were parallel sessions through much of the meeting this afforded an opportunity for people who were unable to attend a particular session to get an overview of the main points made by the speakers.

DTIC

Rhythm (Biology); Phenology

19980016153 NASA Langley Research Center, Hampton, VA USA

Aerospace Medicine and Biology: A Continuing Bibliography with Indexes

19980223; 27p; In English

Report No.(s): NASA/SP-1998-7011/SUPPL459; NAS 1.21:7011(459); No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

This report lists reports, articles and other documents recently announced in the NASA STI Database.

Author

Aerospace Medicine; Data Bases; Bioastronautics; Biological Effects; Physiological Effects; Manned Space Flight

19980016488

Survey on health effects due to aircraft noise on residents living around Kadena air base in the Ryukyus

Hiramatsu, K., Mukogawa Women's Univ., Japan; Yamamoto, T.; Taira, K.; Ito, A.; Nakasone, T.; Journal of Sound and Vibration; August 28, 1997; ISSN 0022-460X; Volume 205, no. 4, pp. 451-460; In English; Copyright; Avail: Issuing Activity

Results are reported of a questionnaire survey relating to a scale for general health, the Todai Health Index, in a town, bordering on a large U.S. airbase in the Ryukyus. The level of aircraft noise exposure, in the town, expressed by WECPNL, ranges from 75 to 95 or more. The sample size was 1200, including a 200 person 'control' group. Results of the analysis of the responses in

terms of the noise exposure suggest that the exposed residents suffer psychosomatic effects, especially perceived psychological disorders, due to the noise exposure to military aircraft, and that such responses increase with the level of noise exposure.
Author (EI)
Aircraft Noise; Noise (Sound); Health; Risk; Noise Pollution

19980016531 NASA Langley Research Center, Hampton, VA USA
Aerospace Medicine and Biology: A Continuing Bibliography with Indexes (Supplement 456)
19980112; 32p; In English
Report No.(s): NASA/SP-1998-7011/SUPPL456; NAS 1.21:7011(456); No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

This report lists reports, articles and other documents recently announced in the NASA STI Database.
Author
Aerospace Medicine; Manned Space Flight; Biotechnology; Biocompatibility; Physiological Factors; Psychological Factors; Bioastronautics

19980016561 Air Force Office of Scientific Research, Bolling AFB, Washington, DC USA
Proceedings of Laser and Noncoherent Ocular Effects: Epidemiology, Prevention, and Treatment
Stuck, Bruce E., Air Force Office of Scientific Research, Bolling AFB, USA; Belkin, Michael, Editor, Air Force Office of Scientific Research, Bolling AFB, USA; Katzir, Abraham, Editor, Air Force Office of Scientific Research, Bolling AFB, USA; Feb. 11, 1997; 239p; In English; Laser and Noncoherent Ocular Effects: Epidemiology, Prevention, and Treatment, 10-11 Feb. 1997, San Jose, CA, USA
Report No.(s): AD-A331096; No Copyright; Avail: CASI; A11, Hardcopy; A03, Microfiche

The spread of laser instruments to many fields of human activity and the potential of laser radiation to produce biological damage make certain that laser accidents leading to human injuries will occur. Laser radiation is especially liable to cause accidents since it may be projected over long distances, is often used in the open space, and is sometimes invisible. The potential of laser instruments to be harmful was realized quite early on in their development, and stringent rules were imposed in most countries to minimize injuries. Those regulations are obviously effective since laser injuries are as yet uncommon and the reported cases number only in the hundreds. However, more accidental laser-inflicted traumata are expected in the future as more people are potentially exposed. The situation it especially grave in the military where lasers constitute parts of weapon systems to be used outdoors and are necessarily directed at other people. The hazards are even greater when the potential victims are using collecting optics. The facts regarding laser injuries are well known enough for some military planners to develop laser weapons aimed at producing visual incapacitation of the enemy. Some of these systems have been fielded and used. These potential weapons are based Os the fact that the eye is the body organ most vulnerable to laser radiation, especially in the visible and near-infrared wavelengths. This vulnerability is a result of the eye's dioptrics apparatus focusing the light on the retina, thus increasing the energy concentration many thousand fold. Consequently, almost all of the laser accidents reported thus far involved ocular, mainly retinal, damage.
DTIC
Accidents; Activity (Biology); Collection; Conferences; Damage; Distance; Epidemiology; Laser Beams; Laser Outputs; Laser Weapons; Lasers

19980016641 New Mexico State Univ., Dept. of Civil, Agricultural and Geological Engineering, Las Cruces, NM USA
Microbial Toxicity of Non-Uniform Mixtures of Xenobiotic Chemicals ***Final Report, 01 Jul. 1994 - 30 Jun. 1997***
Khandan, N. N., New Mexico State Univ., USA; Jun. 1997; 3p; In English
Contract(s)/Grant(s): F49620-94-I-0366; AF Proj. 3484
Report No.(s): AD-A329750; No Copyright; Avail: CASI; A01, Hardcopy; A01, Microfiche

The scope of work under the AASERT grant included measuring and analysis of toxicity data for additional chemicals than the parent grant and to validate models developed under the parent grant. A total of 35 new chemicals were assayed using the procedures developed under the parent grant. Non-uniform, multi-component mixture studies were completed and analyzed using the new modeling approach developed during the previous period. A new statistical modeling approach to analyze nonuniform mixture has been formulated and tested on data generated under the parent grant.
DTIC
Microorganisms; Toxicity; Chemical Compounds

19980016772 George Washington Univ. Medical Center, Center for Health Policy Research, Washington, DC USA

Evaluation of Public Health Reporting, Health Data Systems, and Confidentiality Policies and Practices in the States: A Policy Assessment ***Final Report***

Spernak, S. M., George Washington Univ. Medical Center, USA; Dec. 31, 1995; 247p; In English

Contract(s)/Grant(s): PHS-282-92-0040/13

Report No.(s): PB97-205082; No Copyright; Avail: CASI; A11, Hardcopy; A03, Microfiche

This report locates and describes state laws that govern reporting and confidentiality of public and private health data. It also collects information from government and private officials in states to determine what health data projects are ongoing or planned, and the impact of the state laws on these projects. Seven states were selected as case studies: California, Illinois, Iowa, Missouri, New York, South Carolina, and Utah. The report finds that all states require that certain kinds of patient-level information be reported for public health purposes. The most frequently required categories include: (1) communicable disease; (2) vital statistics; (3) hospital discharge; (4) Alzheimer's Disease; (5) cancer; (6) birth defects; (7) head and spine injury; and (8) chemical exposure. Only three of these (communicable diseases, vital statistics, and hospital discharge data) are required in all seven states. There is considerable variation in the confidentiality laws governing these public health databases and other records containing patient-level data.

NTIS

Laws; Policies; Public Health; Data Systems; Regulations

19980016815 Institut Franco-Allemand de Recherches, Saint-Louis, France

Comparison of Mid Ear Canal (MIRE) and Tympanum (Ear Simulator) Located Measurements on an Artificial Head for the Assessment of an Earmuff in Impulse Noise Exposure

Franke, R., Institut Franco-Allemand de Recherches, France; Parmentier, G., Institut Franco-Allemand de Recherches, France; 1995; 23p; In English

Report No.(s): PB96-132972; ISL-PU-320/95; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

Measurements of the response and the dynamics of a typical MIRE frame were performed using impulse noises in free field. The Insertion Loss (IL) of a Peltor H7A muff was determined using a MIRE device mounted on the ISL Artificial Head (AH) in high level impulse and low level steady state noise exposure (grazing incidence), and compared to the IL obtained simultaneously from the AH itself. Additionally, these results were likened to data obtained with the subjected method (REAT) and derived from the literature.

NTIS

Ear Protectors; Noise Reduction; Steady State; Ear; Canals

19980016840 Yale Univ., School of Medicine, New Haven, CT USA

Metal Fume Fever ***Final Report***

Beckett, W. S., Yale Univ., USA; Chen, L. C., Yale Univ., USA; Cosma, G., Yale Univ., USA; Fine, J., Yale Univ., USA; Garte, S., Yale Univ., USA; Jul. 26, 1996; 41p; In English

Report No.(s): PB97-206379; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

The acute response to zinc-oxide (1314132) fumes in naive human subjects and galvanized sheet metal workers was investigated. of 12 naive subjects, ten experienced a mild fever after a 2 hour exposure to zinc-oxide fume at 5mg/m3 (the OSHA permissible exposure limit) or 2.5mg/m3. Metal fume fever symptoms were significantly increased 6 and 9 hours after a 5mg/m3 exposure. The most common symptoms were fatigue, muscle ache, and cough. Elevated white blood cell counts were also seen. Those who experienced mild symptoms and fever developed tolerance of these effects with repeated exposures on subsequent days. Sheet metal workers with ongoing low level exposure showed tolerance to exposure at 5mg/m3. However, zinc-oxide exposure in these individuals induced elevated levels of interleukin-6 in the blood. The findings demonstrated that mild symptoms and fever can occur in previously unexposed men and women several hours after they breathe ultrafine zinc-oxide fumes for only 2 hours at the 5.0mg/m3 level. This occurred in a high proportion of healthy and normal individuals.

NTIS

Human Beings; Immune Systems; Leukocytes; Signs and Symptoms; Blood; Females; Fever; Muscles

19980016863 Naval Postgraduate School, Monterey, CA USA
Analysis of Small Business' Perspective on the Electronic Data Interchange Acquisition Reform
Hagen, Paul W., Naval Postgraduate School, USA; Jun. 1997; 98p; In English
Report No.(s): AD-A333374; No Copyright; Avail: CASI; A05, Hardcopy; A02, Microfiche

This thesis examines small business' perception of utilizing Electronic Data Interchange (EDI) as a means to conduct business. The general concept and history of EDI is discussed along with a synopsis of current Government EDI systems in use. The results of two surveys are analyzed to provide an insight on the effect the Federal Acquisition Streamlining Act is having on small business' opportunity to obtain Government Contracts. Additionally, interviews were conducted with several Government personnel to get their opinions on the progress of EDI in the workplace. The major conclusion drawn is that the majority of small businesses are willing to utilize EDI as a means to conduct business. But in its current form (i.e. FACNET) small businesses find it difficult to use and too expensive. The need to use a simpler and more cost-effective means is necessary to ensure t hat all small businesses have the opportunity to compete for Government contracts without cutting into their profit margins.
DTIC
Data Management; Data Acquisition; Information Transfer

53
BEHAVIORAL SCIENCES

Includes psychological factors; individual and group behavior; crew training and evaluation; and psychiatric research.

19980012387
Measuring the importance of ethical behavior criteria
Pearson, J. Michael, St. Cloud State Univ., USA; Crosby, Leon; Shim, J. P.; Communications of the ACM; September, 1997; ISSN 0001-0782; Volume 40, no. 9, pp. 94-100; In English; Copyright; Avail: Issuing Activity

Results are presented of a study on issues related to the information system (IS) professional's evaluation of ethical behavior. The impact of individual characteristics on the IS professional's ability to identify the role of certain decision criteria in his/her ethical evaluation is described. The IS professional's ability and/or willingness to conduct himself/herself in an ethical manner is discussed.
EI
Information Systems; Standards; Aptitude; Psychological Tests

19980013387
About the image elements number in the observer field of vision
Kovalev, A. M.; Avtometriya; May-June, 1997; ISSN 0320-7102, no. 3, pp. 30-34; In Russian; Copyright; Avail: Issuing Activity

An estimate is given for the elements number of a spherical image in the observer sight with allowance for the dependence of keenness of sight at the image place on the eye retina. The number of resolved image elements in the monocular field of vision is shown to correlate with the number of fiberlets in the optic nerve and not exceed the number of pixels of the usual SVGA-monitor.
EI
Eye (Anatomy); Visual Perception; Vision; Image Analysis; Image Processing; Physiology

54
MAN/SYSTEM TECHNOLOGY AND LIFE SUPPORT

Includes human engineering; biotechnology; and space suits and protective clothing. For related information see also 16 Space Transportation.

19980012449
Analysis of computer integrated manufacturing systems by fuzzy human operator behaviour
Utkin, Lev V.; Gurov, Sergey V.; Shubinsky, Igor B.; Journal of Quality in Maintenance Engineering; 1997; ISSN 1355-2511; Volume 3, no. 3, pp. 189-198; In English; Copyright; Avail: Issuing Activity

Analyses computer integrated manufacturing systems with the real-time constraints under the condition that time to repair depends on human experience and can be fuzzy. Proposes an approach which combines probability and possibility measures. Illustrates the impact of the growth of human experience on the reliability characteristics with an application example.
Author (EI)
Manufacturing; Fuzzy Sets; Human Factors Engineering; Personnel; Reliability

19980012534 Army Aeromedical Research Lab., Aircrew Protection Div., Fort Rucker, AL USA
Pressures Measured Under Earmuffs Worn by Human Volunteers During Exposure to Freefield Blast Overpressures ***Final Report***
Patterson, James H., Jr., JAYCOR, USA; Mozo, Ben T., Army Aeromedical Research Lab., USA; Gordon, Elmaree, Army Aeromedical Research Lab., USA; Canales, Jesus R., Army Aeromedical Research Lab., USA; Johnson, Daniel L., Edgerton, Germeshausen and Grier, Inc., USA; Aug. 1997; 106p; In English
Contract(s)/Grant(s): DAMD17-88-C-8141
Report No.(s): AD-A331738; USAARL-98-01; No Copyright; Avail: CASI; A06, Hardcopy; A02, Microfiche

A series of studies to determine the maximum safe exposures to blast overpressure (high intensity impulse noise) were conducted at the Blast Overpressure Test Site on Kirtlan d Air Force Base, NM, by EG&G Management Systems. Inc., Albuquerque, NM. The studies focused on temporary changes in the threshold of hearing in volunteers wearing earmuffs for hearing protection. From these studies, maximum safe exposure levels have been derived in terms of the parameters of the freefield blast signatures. In collaboration with the contractor researchers at the test site, a field measurement team from the U.S. Army Aeromedical Research Laboratory (USAARL) recorded the pressure signatures under the earmuffs of a subset of the volunteers participating in the studies. These pressure signatures are representative of the effective exposure stimuli arriving at the ears of the volunteers. This report presents the results of these under-the-muff measurements. An analysis of indicators of auditory hazard derived from the pressure-time signatures under the muffs indicated that weighted sound exposure level (SEL) measures and peak levels corrected for B-duration are good indicators of auditory hazard when a correction factor of 1 to 5 dB per 10 fold change in number of impulses is used as the number-intensity trading rule.
DTIC
Hazards; Hearing; High Impulse; Noise Intensity; Protection

19980012642
Locations of headlamps and driver eye positions in vehicles sold in the USA
Sivak, Michael, Univ. of Michigan, USA; Flannagan, Michael J.; Budnik, Eric A.; Flannagan, Carol C.; Kojima, Shinichi; Ergonomics; September, 1997; ISSN 0014-0139; Volume 40, no. 9, pp. 872-878; In English; Copyright; Avail: Issuing Activity

Information about the locations of headlamps and driver eye positions is important in estimating the performance of a variety of traffic-safety equipment, such as retroreflective traffic signs and markings, rearview mirrors, and headlamps. Driver eye height is also an important factor in determining safe sight distances on vertical curves. However, no comprehensive database concerning the locations of headlamps and driver eye positions exists for the current US fleet. The present study was designed to obtain such information for vehicles currently sold in the USA. The information was derived from the 15 best-selling cars and the 15 best-selling light trucks and vans. These 30 vehicles represent 52% of all vehicles sold in the USA in 1995. For headlamp locations, actual vehicle measurements were made. For driver eye positions, dimensional information provided by vehicle manufacturers was used to estimate the location of the driver seating reference point. A computer model that predicts the relationship of the driver eye position to the driver seating reference point was then used to calculate driver eye positions. The obtained information includes sales-weighted mean dimensions for the locations of headlamps and driver eye positions, calculated separately for cars and for light trucks and vans.
Author (EI)
Eye (Anatomy); Position (Location); Human Factors Engineering; Automobiles; Computerized Simulation; Accident Prevention

19980012659
Preface to the special section on the Analysis, Design and Evaluation of Man-machine Systems (MMS '95)
Kawai, K., Toshiba Corp., Japan; Control Engineering Practice; March, 1997; ISSN 0967-0661; Volume 5, no. 3, pp. 347-348; In English; Copyright; Avail: Issuing Activity

The 6th Symposium on the Analysis, Design and Evaluation of Man-Machine Systems (MMS '95) was held at the Massachusetts Institute of Technology in June 1995. The technical papers presented in the symposium dealt with topics related to telerobot-

ics; cognitive systems engineering; situation awareness and mode awareness; human-centered design approaches; ecological interface design; and hypermedia and advanced displays.
EI
Man Machine Systems; Multimission Modular Spacecraft; Presentation; Technical Writing; Robotics; Remote Control

19980012660
Conceptual design of multi-human machine interfaces
Johannsen, G., Univ. of Kassel (GhK), Germany; Control Engineering Practice; March, 1997; ISSN 0967-0661; Volume 5, no. 3, pp. 349-361; In English; Copyright; Avail: Issuing Activity

Human-machine interfaces for cooperative supervision and control by see human users, either in control rooms or in group meetings, are dealt with. The information flow between the different human users, and their overlapping information needs, are explained. The example of a cement plant illustrates this in more detail. Cognitive science concepts for supporting visual and mental coherence, as well as multi-media, hypertext and CSCW (computer supported cooperative work) technologies, are discussed with respect to their usage in multi-human machine interfaces. The design process for these interfaces is outlined, with emphasis on the different design stages, user participation and the possibility of knowledge-based design support. Some ideas for the conceptual structure of multi-human machine interfaces are also presented.
Author (EI)
Information Flow; Manual Control; Human-Computer Interface; Man Machine Systems; Data Acquisition; Cognition; Process Control (Industry)

19980012663
Development of an analysis support system for man-machine system design information
Yoshikawa, H., Kyoto Univ., Japan; Nakagawa, T.; Nakatani, Y.; Furuta, T.; Hasegawa, A.; Control Engineering Practice; March, 1997; ISSN 0967-0661; Volume 5, no. 3, pp. 417-425; In English; Copyright; Avail: Issuing Activity

An integrated software system has been under development, aimed at analyzing and evaluating the effectiveness of man-machine system design, by computer simulations from various viewpoints of human factors. The target software system consists of two functional blocks; (i) a distributed simulation system for man-machine interaction at the man-machine interface, and (ii) a man-machine design information evaluation system. In this paper, the configuration of the distributed simulation system is first introduced, followed by an explanation of how the operator simulator model is organized, using a Petri-net model. An example simulation is also presented for the man-machine interaction at a PWR LOCA accident using the developed system.
Author (EI)
Human Performance; Man Machine Systems; Support Systems; Systems Engineering; Computer Programming; Hydroelectricity; Human-Computer Interface; Decision Making

19980013023
Resonant frequencies of standing humans
Randall, J. M., Silsoe Research Inst., UK; Matthews, R. T.; Stiles, M. A.; Ergonomics; September, 1997; ISSN 0014-0139; Volume 40, no. 9, pp. 879-886; In English; Copyright; Avail: Issuing Activity

Many forms of industrial illness are thought to result from the effects of vibration on the human body. Prolonged exposure causes undue stress and discomfort. At the human whole-body resonant frequency there is maximum displacement between the organs and the skeletal structure and thus this is one frequency of vibration that should be minimized in the workplace and elsewhere. The vertical whole-body resonant frequencies of 113 fully-clothed standing humans were measured using a vibrating beam method, which imposed a very low acceleration magnitude at the subjects' feet. The overall range of resonant frequencies was found to be from 9 to 16 Hz and independent of mass, height and mass to height ratio. The mean values (+/- 1 s.e.) were 12.2 +/- 0.1 Hz for males and 12.8 +/- 0.2 Hz for females with an overall mean population value of 12.3 +/- 0.1 Hz.
Author (EI)
Resonant Frequencies; Human Factors Engineering; Vibration Measurement; Assessments; Risk

19980014104 Anthropology Research Project, Yellow Springs, OH USA
Reconciling Anthropometric and Tailoring Measurements for Clothing Design ***Final Report, 2 Aug. 1996 - 27 May 1997***
Bradtmiller, Bruce, Anthropology Research Project, USA; May 27, 1997; 147p; In English
Contract(s)/Grant(s): SPO100-95-D-1010
Report No.(s): AD-A331099; No Copyright; Avail: CASI; A07, Hardcopy; A02, Microfiche

Over the years, the U.S. military services have acquired a large body of anthropometric data, much of it for application to the design and sizing of military clothing. These data have not, however, been as fully utilized as they might have been because a number of measurement definitions used by anthropologists are unfamiliar to expert tailors who traditionally measure the same dimensions or their equivalents quite differently. The goal of this research was to document the relationship between anthropological measurements and tailoring measurements, not only identifying similarities and differences between measurement techniques, but quantifying the relationship mathematically, so it would be possible to take an anthropological measurement and convert it to an equivalent tailoring measurement. A group of 127 U.S. Army recruits (60 males and 67 females) was measured for some two dozen dimensions relevant to military dress clothing, using both anthropological and tailoring techniques. Resulting values were compared and differences between the two techniques were quantified. The final product is a set of four conversion tables which convert anthropological measures into tailoring measures and vice versa for men and for women.
DTIC
Clothing; Females; Males

19980015365 NERAC, Inc., Tolland, CT USA
Night Vision and Dark Adaptation. (Latest Citations from the NTIS Bibliographic Database)
Mar. 1996; In English; Page count unavailable.
Report No.(s): PB96-864012; Copyright Waived; Avail: Issuing Activity (Natl Technical Information Service (NTIS)), Microfiche

The bibliography contains citations concerning the physiological aspects of night vision and dark adaptation. The reports pertain to performance in low light level illumination of motor vehicle operators, pilots, military personnel, and others who are subject to reduced lighting conditions. Some citations report on research on the response and adaptation of visual sensory functions of humans and animals under low light levels. The data can be used in human engineering to define night vision limits and capabilities, or to increase conspicuity of objects or surroundings to assist in the performance of tasks at night.
NTIS
Bibliographies; Night Vision; Dark Adaptation; Visual Perception; Illuminating

19980015408 NERAC, Inc., Tolland, CT USA
Repetitive Motion Disorders. (Latest Citations from the ABI/Inform Database)
Mar. 1996; In English; Page count unavailable.
Report No.(s): PB96-864061; Copyright Waived; Avail: Issuing Activity (Natl Technical Information Service (NTIS)), Microfiche

The bibliography contains citations concerning repetitive motion disorders in the workplace. Work-related musculoskeletal disorders, repetitive strain injury, and cumulative trauma disorders and their effects on employee performance and productivity are discussed. Various policies, guidelines, and programs dealing with this problem are reviewed. Solutions and recommendations for reducing this risk within various work environments are provided.
NTIS
Bibliographies; Human Factors Engineering; Personnel Management; Injuries; Musculoskeletal System

19980016670 NERAC, Inc., Tolland, CT USA
Anthropometry (Latest Citations from the Aerospace Database)
Dec. 1995; In English; Page count unavailable
Report No.(s): PB96-855903; Copyright Waived; Avail: Issuing Activity (Natl Technical Information Service (NTIS)), Microfiche

The bibliography contains citations concerning methods used to calculate important anthropometric and biomechanical parameters pertaining to human performance. Topics include recent advantages in analysis, methods, devices and techniques for measurement of human biomechanical activity and theoretical research into the applicability of analytical mechanics to human motion problems. Optimal performance of human motion and optimal modeling for specific human motion are discussed. (Contains 50-250 citations and includes a subject term index and title list.)
NTIS
Anthropometry; Bibliographies

19980016764 Michigan Univ., Transportation Research Inst., Ann Arbor, MI USA

Suggested Procedures and Acceptance Limits for Assessing the Safety and Ease of Use of Driver Information Systems ***Final Report, Sep. 1991 - Nov. 1993***

Green, P., Michigan Univ., USA; Dec. 1995; 72p; In English

Report No.(s): PB96-165386; UMTRI-93-13; No Copyright; Avail: CASI; A04, Hardcopy; A01, Microfiche

This report (1) identifies measures of the safety and ease of use of driver information systems, (2) describes test protocols for assessing safety and ease of use, and (3) identifies levels of acceptance. Only the driver interface is considered, not system safety considerations. Two protocols are described: an initial on-road test to assess the basic interface, and flow-on surveys at driver licensing offices after only small changes are made to the interface. The on-road test involves use of an instrumented car. From the data collected, measures of the standards deviation of lane position, mean speed, speed variance, the number and duration of eye fixations, and interface-specific performance measures (e.g., the number of turn error) can be obtained. For each measure, three levels of acceptance are specified: best expected, desired/planned, and worst case.

NTIS

Eye (Anatomy); Information Systems; Safety Factors; Systems Engineering; Variance (Statistics)

19980016806 Michigan Univ., Transportation Research Inst., Ann Arbor, MI USA

Human Factors of In-Vehicle Driver Information Systems: An Executive Summary ***Final Report, Sep. 1991 - May 1993***

Green, P., Michigan Univ., USA; Boehm-Davis, D., Michigan Univ., USA; Dec. 1995; 46p; In English

Report No.(s): PB96-165097; UMTRI-93-18; No Copyright; Avail: CASI; A03, Hardcopy; A01, Microfiche

This report summarizes a multiyear program concerning driver interfaces for future cars. The goals were to develop (1) human factors guidelines, (2) methods for testing safety and ease of use, and (3) a model that predicts human performance with these systems. After reviewing the human factors literature, focus groups were conducted to assess driver attitudes towards new information systems. Next, the extent to which these systems might reduce traffic accidents, improve traffic operations, and satisfy driver needs and wants was examined. Based on that effort and contract requirements, five functions were selected for further evaluation - route guidance, traffic information, road hazard warning, cellular phone, and vehicle monitoring.

NTIS

Human Factors Engineering; Human Performance; Information Systems; Traffic

19980016891 Michigan Univ., Transportation Research Inst., Ann Arbor, MI USA

Preliminary Human Factors Design Guidelines for Driver Information Systems ***Final Report, Sep. 1991 - May 1993***

Green, P., Michigan Univ., USA; Levison, W., Michigan Univ., USA; Paelke, G., Michigan Univ., USA; Serafin, C., Michigan Univ., USA; Dec. 1995; 112p; In English

Report No.(s): PB96-165089; UMTRI-93-21; No Copyright; Avail: CASI; A06, Hardcopy; A02, Microfiche

This document is written for the designers of IVHS-related driver information systems. It describes how to make those systems safe and easy to use for ordinary drivers. These guidelines are based on experimental work carried out as part of this project, the literature, and the authors' human factors experience. This document includes a description of its objectives, general design principles, and guidelines for the design of manual controls, spoken input, visual displays, auditory displays, destination entry, visual displays for navigation, auditory displays for navigation, traffic information, car phones, vehicle monitoring, IVSAWS (a hazard warning system), interface integration, as well as an extensive reference section. For most guidelines, a commentary and examples of how they should be applied are provided.

NTIS

Information Systems; Human Factors Engineering; Design Analysis; Experimentation

Subject Term Index

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