IFA
Institut für Arbeitsschutz der
Deutschen Gesetzlichen Unfallversicherung

Trend collection Risk Observatory of the DGUV (as of June 2023)

Trend category	Topic	Trend
Digital transformation and connectivity	**Data**	
		Big data (incl. real-time data, predictive analytics)
		Cloudcomputing
		Edge computing (resource-efficient decentralized processing of data streams)
		Distributed-ledger-technologie (e.g. blockchain)
		Cryptocurrencies
		Cybercrime
		Open data and open API (application programming interface)
	Communication	Detection and control by thoughts, gestures, facial expressions, speech (touchless tech)
		Fake news, desinformation, manipulation
		Geofencing (virtual geographical boundaries that trigger actions when crossed)
	Smart technologies	Smart dust (cloud of networked computers the size of dust particles)
		Smart technologies (e.g. smart home, smart city, smart textiles, smart implants)
		Wearables
		Networked automation (Internet of Things, Industry x.0)
		Robotization (including collaborative robots)
		Artificial intelligence
		Neuromorphic hardware (computer architectures that are modelled on the morphology of neural networks in order to increase performance)
New technologies	**New technologies**	Quantum technologies (e.g. quantum computing, simulation, sensors, communication)
		Digital models for visualization (e.g. simulations, digital twins, 3D models)
		3-D displays (volumetric displays)
		Photonic technologies (e.g. for biomedical microscopy/imaging)
		Bionics (transfer of natural phenomena to technology)
		Augmented and virtual reality (including involving haptics)
		Metaverse (digital, three-dimensional Internet based on virtual reality, in which people can interact with each other as avatars)
		Sensors and (ultra-sensitive) detectors
		Air purification technologies (e.g. hydrogen peroxide, CO_2 granulate)
		Space exploration technologies
	Materials	Resistant memory chips (resistance to extreme heat and ionizing radiation)
		Synthetic biology (synthetic production of new biological organisms/systems not present in nature)
		Molecular farming
		New battery types (rechargeable and non-rechargeable)
		Programmable materials (i.e. with integral functionalities: materials with adjustable properties, such as permeability, conductivity, hardness, density, size)
		New types of semiconductor (2D materials, miniaturization)
		Lightweight construction (aluminium, fibre composite and hybrid materials, magnesium, titanium, high-strength steels, metal foam and powder)
Globalization	**Globalization**	National self-interest and protectionism in Europe (democratic values, solidarity, collaboration, the economy, social affairs, security, etc.)
		Rearmament and the European Defence Union
		Changing world order and international relations
		Global migration
		Harmonized standards and certification at international level
		Migration of pathogens (pandemics)
The Economy	**Economy**	Inflation
		The training sector (coaching, tutoring, edutainment)
		Supply Chain Act
	Business forms	Omni-channeling
		Crowdworking, crowdfunding, crowdinvesting, crowdtesting, crowdthinking
		Hybridization of retail (brick-and-mortar and online)
		Platform economy
		Solo self-employment
		Voluntary work/volunteering
		Monopolization (e.g. the GAFA companies)
		Logistics and delivery services (including express delivery services)
New Work	**Organisation**	Organizational vulnerability (lack of resilience)
		Flexibilization of working hours and place of work
		Creativity and capacity for innovation (start-up culture)
		Knowledge transfer/management by collaboration/cooperation
		Agile working and elimination of bureaucracy
		24/7 society
		XaaS (anything as a service: business model for services and applications of all kinds procured over the Internet)
		New office concepts (e.g. co-working spaces, desk sharing)
	Enhancement	Human enhancement for increased physical performance (e.g. exoskeletons)
		Consumption of legal and illegal addictive substances (including for neuroenhancement (enhanced performance by means of psychoactive substances))
	Health	Emotional demands at work
		Well-being at work (e.g. through meaningful work, gamification of work processes, self-efficacy)

Trend category	Topic	Trend
Climate change, nature and resource conservation, the low-carbon economy	Sustainability	Storage technologies
		Alternative fuels (e.g. hydrogen, methane, ammonia)
		Sustainability
		Cultured (in vitro) meat/fish
		Relocalization (production close to the sales market)
		Energy efficiency
		Expansion of renewable energies
	Ressources	New types of plastics and alternatives to plastic
		Deep-sea mining (e.g. for copper and cobalt)
		Recycling and the circular economy
		Scarcity of raw materials (e.g. rare earths, sand)
		New foods (e.g. meat substitutes, insects, algae)
		Use of high-yield and resistant plants
	Climate change	Climate change (e.g. rising temperatures, ocean warming and acidificatio, rising sea levels, Gulf Stream shift, water shortages)
		Natural disasters and extreme weather phenomena (drought, storms, heavy rain, extreme heat or cold)
		Pathogenic germs and allergens (caused for example by invasive species, dwindling natural habitats, changing climate zones)
		Reduction of greenhouse gases in the atmosphere
		Methods for influencing solar radiation (solar radiation management)
	Nature conservation	Loss of biodiversity (declining species diversity, impaired ecosystems)
		Use of insects for pest control
		Air pollution (e.g. by smoke, soot, dust, exhaust fumes, aerosols, vapours, odorous substances, microplastics)
		Soil pollution/littering (including by microplastics)
		Water pollution (e.g. by microplastics, pharmaceutical residues, pesticides)
		Ordnance scrap in soils and waters
		Biocides, pesticides and fertilizers
		Perfluorinated and polyfluorinated alkyl compounds (PFASs)
Infrastructure	Infrastructure	Insecurity of supply (e.g. energy, water, food, traffic/transport, IT/telecommunications, health, finance/insurance)
		Modernization, renovation, maintenance and refurbishment backlogs
		Expansion of the communications network (5G, 6G)
		Upgrading and expansion of electricity grids
		Publicly regulated, global satellite navigation and communication system
		Risks from outer space (space weather, asteroids, space debris)
Mobility	Mobility	Modified or innovative means of transport, including autonomous transport (e.g. drones, long combination vehicles, hoverbikes, hyperloops, autonomous aircraft)
		Networked mobility (seamless linking of multiple transport modes, including via platforms)
		Sustainable mobility
		Micromobility
		Driver assistance systems
Demographic development and diversity	Demographics	Shortage of personnel and skilled workers
		Demographic change and imbalanced age structure
	Living conditions	Urban flight (migration to rural areas)
		Multi-generational homes and co-living
		Flexible life models (divergence from traditional life models and family structures)
	Diversity	Behavioural problems and disorders
		Concepts for individualized education
		Inclusion of persons with disabilities
		Gender equality
Social affairs and health	Conflicts	Risk of poverty
		Social and political extremism, polarization
		Physical and/or mental violence
		Robberies, terrorist attacks, mass shootings
	Individualisation	Individualization of products, offers and services
		Egocentricity and changes in social cohesion (e.g. decline in membership of associations and churches, weakening of trade unions)
		Diets (plant-based, organic, halal, kosher, gluten-free, lactose-free, etc.)
	Enhancement	Self-optimization (striving for a perfect appearance, fulfilment role expectations, high performance)
		Valuetainment (entertainment of the future = meaningful entertainment to meet social and ecological challenges)
	Health	New pharmaceuticals, vaccines and therapies (e.g. cytostatics, antibiotics in resistance cases, particle accelerators for cancer therapy)
		Physical inactivity
		Unhealthy diet