Excellence Award



February 20, 2015



COMPANY/ORG PROFILE

- Over 212,000 employees worldwide
 - 35% are based in the United States
- Present in 180 countries, including 46 United States
- \$65B Net Sales



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UTC CORPORATE OFFICE



Data Reporting and Governance Function

- Reporting to the Business Unit (BU) EH&S VPs
 - Monthly Metrics and Compliance Report (posted on UTC EH&S website)
 - Sr. EH&S Council Meetings
- Reporting to the Business Unit Presidents, the General Counsel, and the Chairman
 - Quarterly Presidents Metrics Report (posted on UTC EH&S website)
 - Presidents Meetings
- Reporting to the Board
 - Public Interest Review Committee, twice a year
- Reporting to the Shareholders
 - Annual Report

EH&S PROFESSIONAL STAFF





EH&S COMMUNICATION

Communicate & collaborate on UTC performance and expectations.

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EH&S

Sites

BU

- Provide technical resources to BUs in support of requirements and expectations.
- Analyze data trends to determine improvement opportunities and identify high risks/sites and/or operations.
- Enhance guidance, and deploy tools and focused initiatives to support the goals.

EH&S COMMUNICATION

- Deploy company level training to enhance compliance and increase technical expertise.
- Strengthen EH&S programs through benchmarking, enhanced data analysis, process improvements, technology implementation, and other tools.
- Improve and expand effective practices sharing; deliver webinars and other communications in areas of greatest EH&S need/opportunity.



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UTC EH&S POLICY



Key component of corporate responsibility

"United Technologies Corporation will not be satisfied until its workplace is safe from hazards, its employees are injury free, its products and services are safe, and its commitment to and record in protecting the natural environment are unmatched."



EH&S MANAGEMENT SYSTEM (EHSMS)

The EH&S Management System (EHSMS) is organized into twelve elements that support UTC's EH&S continual improvement process:

- Policy & Leadership
- Accountability
- Communication
- Incident Investigation
- Organization
- Assessment, Prevention & Control
- Rules & Procedures
- Records Management

- Planning
- Education & Training

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- Inspections & Audits
- Program Evaluation

In our EHSMS, we further document **Minimum Operating Requirements** (MOR), one of which is: All industrial hygiene hazards must be assessed, and eliminated or controlled.

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UTC STANDARD PRACTICES (SP)

Address significant risks that affect the entire corporation

- Worldwide applicability
 - Comply with these standards or local laws/regulations whichever are more stringent
- Focus is on Continuous Improvement



UTC STANDARD PRACTICES (SP)



 Use of engineering controls, where practical, when noise levels greater than 85 dBA as an 8 hour TWA have been identified.

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E&HS STANDARD PRACTICE SP-004 INDUSTRIAL HYGIENE MANAGEMENT

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A. <u>INTENT</u>

This Health and Safety Standard Practice requires all UTC business units and operations to establish an Industrial Hygiene Management System to ensure that risks are identified and control measures, in line with accepted industrial hygiene practices, are in place to mitigate and control health effects caused by chemicals or other environmental workplace hazards.

B. APPLICABILITY

This Standard Practice applies to all UTC business units and operations worldwide including those joint ventures, partnerships, or other business arrangements where UTC holds a majority ownership interest, majority-voting control, or where UTC, by contract, has agreed to manage the company. Each operation will comply with all applicable legal EH&S requirements, business unit requirements and with this UTC EH&S Standard Practice.

C. REQUIREMENTS

Minimum Operating Requirem and this standard practice has a corresponding MOR: All industrial hygien mazards must be assessed, and eliminated or controlled.

Each Operation that has the potential for industrial hygiene related risks shall develop a written program that outlines the elements of their Industrial Hygiene Management System.

The goal within UTC is to eliminate chemical exposures to our employees. The preferred method will be elimination of the hazard through substitution with a less toxic material. When this is not possible, engineering controls shall be used to achieve exposures as low as reasonably achievable.

As a minimum, the Industrial Hygiene Management System shall address:

- 1. Assessment
 - a) Qualitative Exposure Assessments (hazard recognition)

Each operating unit location shall identify industrial hygiene hazards to which personnel are exposed. This shall include:

Effective Date: 03/26/1992 Review Date: Revision Date: 11/25/2014 Revision#: 6 Copies printed from online system are uncontrolled – verify current issue before use

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HEARING CONSERVATION

Written program:

- Responsibilities
- Hearing Protection (PPE)
- Noise Monitoring
- Noise Control
- Audiometric Testing
- Employee Training
- Recordkeeping
- Program Evaluation

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1.0.2	Audiog	1 PU	RPOSE OSHA's N	states and in US remtories. All sites will also comply with local regulatory requirements regarding Hearing Conservation Programs (HCP).				
202	Audiolo hearing or licen	This Pro 2 OW	s proce gram fc <u>04 Industr</u> Injury/Illne	However, more restrictive elements from <u>UTAS Standard Procedure Supplement 200-</u> 04 Industrial Hygiene Requirements and reporting requirements from <u>UTC SP-003</u> Injury/Illiness Management have been incorporated.				
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	L		Counci	l of Accreditatio	n in Occupational providing consume	Hearing Conservation are safety and protection	on - A professional on by offering	
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Audiometric Testing:

- Conducted by onsite medical or occupational health clinics
- Booths Calibrated
- All employees tested in > 85 dBA work areas
- Tests are professionally reviewed
- Initial re-tests conducted
- Results presented to employee
- Final re-tests conducted by onsite medical or occupational health clinic

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STATISTICAL SUMMARY OF HEARING TEST RESULT.

PPE Selections:

- Based on adequate attenuation properties
- Employee choice/comfort
- Use of other PPE devices such as face shields, hard hats, and safety glasses is considered
- Temperature and climate is considered



Training:

- Conducted during audiogram
- Sites conduct training for all new employees
- Sites conduct annual training •





OVERVIEW OF MODULES

- ⇒ Introduction to Industrial Hygiene
- ⇒ Stressors and Toxicology
- ⇒IH Qualitative Assessment Process
- ⇒ IH Quantitative Assessment Process
- Local Exhaust Ventilation
- ⇒ Ionizing & Non-Ionizing Radiation
- Personal Protective Equipment & Respiratory Protection
- Chemical Hazard Communication

⇒ Hearing Conservation & Noise Control





HEARING PROTECTION

Hearing Protection is REQUIRED whenever you are exposed to noise levels above 85 Decibels. Posting of areas is difficult. A lot of noise is generated by portable tools and not fixed machinery. How can I tell if I am exposed to this high noise level? Use the "3 foot rule". If you are speaking to someone 3 feet away and you have to raise your voice, you are probably in a

Use ear muffs or foam ear plugs.

These provide plenty of protection in



Noise Sampling:

- Area monitoring and informal measurements available on request
- Personal noise dosimetry
- HCP enrollment
- Improvement projects identified
- Updated periodically



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New Equipment Review:

- All new equipment reviewed for < 85 dBA requirement
- Annual Program Evaluation





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EH&S AUDIT PROGRAM



Provides management with a clear and comparable assessment of EH&S status relative to:

- Legal compliance
- Company standards
- Goals
- Other significant EH&S risks
- Effectiveness of EH&S management systems

... How well the operation is managing its EH&S risks

EH&S AUDIT PROGRAM

Measures to Achieve Consistency

- Trained auditors
- Standard work
- Standard UTC protocol
- Regulatory compliance protocol
- Risk ranking
- Validation model
- IT design mistake-proofing:
 - entry of audit findings
 - generation of score
- Scoring: <70 fail, 70-89 pass, 90+ superior
 - Failing or high achieving audits require review



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SUSTAINABILITY

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United Technologies provides high-technology products and services to the global aerospace and building systems industries. When it comes to our EH&S performance, UTC has a long and distinguished record.

We were among the first companies to set targets for reducing energy consumption, water use, chemical emissions and industrial waste and for improving workplace safety. We are on track to meet our 2015 goals and are setting aggressive new targets for 2020.



2015 PERFORMANCE GOALS

UTC's objective is to reduce 100% of employee noise exposures below 85 dBA as an eight hour time weighted average, so that wearing personal protective equipment is no longer mandatory.

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Value:

- Improve health and safety conditions for employees by reducing noise exposures and physical stress levels.
- Increase quality of life.
- Reduce management costs and risks for UTC.

Scope:

• All UTC locations, worldwide

QUIET GOALS



Elimination of employee exposures to noise >85 dBA, 8 hr TWA

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Since 2011 UTC businesses have identified and implemented over 250 projects worldwide in the effort to reduce noise exposures.

Nearly 8,000 employees now have a reduced risk of noise overexposure and physical stress as a result of these efforts.

Noise reduction techniques that involve *minimal* equipment modification and cost

- Room Treatments
- Total Enclosures
- Partial Enclosures
- Covers
- Pipes and Ducts
- Vibration
- Tuning
- Compressed Air
- Hand Tools
- Exhaust Silencers
- Noise Control (Acoustical) Materials







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Duotronics horn was tested on a table top previously. Now it is tested inside a Lexan enclosure with the horn facing into a sound deadening chamber under the table.



AFTER





Adaptatone Millenium horn was previously tested behind a loose sound curtain. New set-up uses internal horn chamber and sliding lexan front door.



Greenline bells were tested in an open sound booth Now the bells are tested in a sound deadening enclosure that still allows operators to make adjustments during testing

AFTER

BEFORE



Benjamin horns were tested in an open booth. A Lexan shield with sound deadening materials was used to protect the operator's hearing zone and still allow for assembly.

One site removed 77% of it's employees from HCP through a number of projects to reduce employee noise

exposure



QUIET FACTORY PROJECT COMPONENTS

Hydraulic Unit Enclosures Mufflers and Insulation Screw Sorter Enclosures **Brazing Changes**

One site removed 80% of it's employees from HCP through a number of projects to reduce employee noise exposure

The Use of an Enclosure With Acoustical Foam to Deburring Area



Polisher Outside Enclosure



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Polisher Inside Enclosure

Before: 104 dBA After: 82 dBA

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Air Gun Substitution





Before: 94 dBA → After: 85 dBA









Transfer Cart Re-design		
dBA Reduction	95 dBA	
Current State	0 dBA	
Number of employees impacted	78	



Before: 94 dBA → After: 79 dBA







Transfer Cart Re-design		
dBA Reduction	15 dBA	
Current State	79 dBA	
Number of employees impacted	78	





Before: 88 dBA \longrightarrow After: 72 dBA





Material Cart Wheels				
dBA Reduction	16 dBA			
Current State	72 dBA			
Number of employees impacted	24			







EMPLOYEE TESTIMONIALS

'The noise reduction project is one of the most significant employee engagement and safety initiatives I have participated in. Improvements were implemented within 6 months and 147 employees were removed from the HCP. I am very appreciative of all that has been done. Noise is a distraction and now I can be more attentive to my work.'

> - Kathy Williams, Surface Treating Operator, Pratt & Whitney, 2014



EMPLOYEE TESTIMONIALS

'I liked how after the noise was reduced, I could actually hear how my tool was operating, and it made my job easier.'

> Production Operator, Carrier Manufacturing Plant, Athens, GA, 2014

SHARING BEST PRACTICES



HAVE YOU HEARD???

TECH CENTER CHAMBERS ARE NO LONGER A HEARING PROTECTION AREA

The Pittsfield site has now removed 77% of its employees in a Hearing Conservation Program through completion of a number of projects to reduce employee noise exposure. The UTC corporate goal is 100% removal of all company employees by 2015 and the site has taken another step with updates to the way we test units at the Tech Center.



Endurance Test Chamber (top left) previously required entry into the chamber to complete tests of Signaling homs. A test station (top night) was wired to allow for all test values to be captured without entry into the chamber. A video monitor was even added to allow for visual checks inside the chamber without entry.

HAVE YOU HEARD???

FINISH AREA IS NO LONGER A HEARING PROTECTION AREA

The last part of the site noise reduction project has been completed with the elimination of hearing protection in the Finish department areas. The project has been a huge success in reducing noise levels throughout the facility to completely eliminate hearing conservation requirements and allow the 57 employees that were in the program to now perform their jobs without hearing protection.

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HAVE YOU HEARD???

UTCF&S Pittsfield Main Eliminates Hearing Protection

If you visit our manufacturing facility in Pittsfield Maine you may notice a dilterence or measurement or noise coming out of its Signaling product assembly and test area. The team just completed a sound reduction project that covered eleven test stations, redesigning the operator interface so that they no longer have to be exposed to loud levels of noise up to 110 dB. The project was designed to meet the UTC corporate Quiet and Clean goal to not have any hearing protection areas by 2015.



Signaling Supervisor, Sharon Rowe, losses the area hearing protection device dispenser, while AI Small (left) and Steve LaPlant (far right) get ready to cut the ceremonial ribbon as the lead technical resources behind the sound reduction improvements in the area. Chris Smith (2^{16} from right), Plant Manager, is ecstatic with the project results.

The sound reduction team, lead by Emmanuel Akese, AI Small, and Steve LaPlant reduced the subjective noise level in the area an amazing 56, to the point where it is the same as working in a quiet office area. This will have a major impact in the working lives of the 39 employees in this area as wearing hearing protection devices can be quite uncomfortable and not overly effective. Reducing the sound exposure while testing a device that's function is to produce a loud alarm signal was quite the undertaking and the team far exceeded the expectation of reducing the noise to below hearing conservation levels.

"We're real proud of the results of this project and I am always amazed by the talented people we have working for us here at the Plant. We had brought in sound experts that couldn't figure out how to allow for testing of these devices while reducing the noise exposure, this team did, and really came through for the people that work in hour Signaling Area." stated Steve LaMarre, Pittsfield LHAS Manager. "This is a great project to highlight our dedication to the health and safety of our employees as we move towards certification under OSHA's Voluntary Protection Program in 2012."



The sound reduction in the Finish areas was facilitated by AI Small and his fellow maintenance team members. The team added sound reduction panels in the Paint area and made modifications to equipment to reduce sound levels below the 85 dB level established by OSHA for hearing conservation. This brings the facility in full compliance with the UTC corporate initiative to eliminate hearing protection throughout the Company by 2015.



FUTURE OF THE INITIATIVE



- Expand focus to include reduction of intermittent noise exposures
- Ensure new facilities / processes are designed to minimize noise exposures

• Continue to identify technical solutions to reduce noise exposure



LESSONS LEARNED



- Establishment of corporate level goals sets the framework for achieving meaningful improvements.
- Engaging the operations and engineering organizations is key to successful project implementation.
- Recognition programs, such as the Safe-in-Sound Excellence Award, help generate renewed excitement around the noise reduction program.





SIGNIFICANCE OF THE AWARD

- Excellent opportunity for 3rd party program review.
- Award recognition provides motivation to further reduce noise exposures.
- Expanded peer-to-peer benchmarking opportunities.





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