

## MESURES D'AGENTS PHYSIQUES : ASPECTS TECHNIQUES ET RETOURS D'EXPÉRIENCE

### *Sommaire de la présentation*

Mesures des agents physiques, aspects techniques et REX

Pascal CARTON  
Centre de Mesures Physiques - CARSAT Nord-Picardie

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### *Le bruit, mesurer pour mieux prévenir*

l'Assurance  
Maladie  
RISQUES PROFESSIONNELS

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### *L'éclairage, adapter la mesure à la situation rencontrée*



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### *Les Centres de Mesures Physiques dans le réseau Prévention*

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### **Missions des Centres de Mesures Physiques**

Expertises des nuisances et ambiances physiques de travail, aidée par une métrologie adaptée, pour la prévention du risque d'accident du Travail et de Maladie Professionnelle et la promotion de la santé.

- Champs électromagnétiques
- Bruit (et ultrasons)
- Ambiances thermiques
- Vibrations
- Électricité statique
- Glissement des sols
- Rayonnements ionisants
- Optiques

### **Missions des Centres de Mesures Physiques**

Expertises des nuisances et ambiances physiques de travail, aidée par une métrologie adaptée, pour la prévention du risque d'accident du Travail et de Maladie Professionnelle et la promotion de la santé.

- Mesurations
- Diagnostics de risques
- Avis, Conseils et propositions
- Etudes prévisionnelles
- Actions de formation, d'information, de communication
- Campagnes nationales et régionales
- Participation au réseau CMP/INRS

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- Les centres de Mesures Physiques dans le réseau Prévention**
- Le bruit, mesurer pour mieux prévenir**

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## Le bruit, mesurer pour mieux prévenir

### Les indicateurs de risques (pour l'audition)

**L<sub>ex,d</sub> :**

Exprimé en dB(A) et qui correspond à la « dose » de bruit reçue par un opérateur → prise en compte des risques de lésions de l'oreille dus à une exposition répétée des opérateurs à des niveaux modérés.

d=8 heures ou 40 heures

$L_{ex,8h} = 90 \text{ dB(A)}$  → la dose de bruit reçue par l'opérateur est la même que celle qu'il aurait reçu s'il avait été exposé à un niveau constant de 90 dB(A)

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### Le bruit, mesurer pour mieux prévenir

**L<sub>p,C</sub> :**

Niveau de crête → prise en compte des risques de lésions immédiates (ou à courts termes) de l'oreille dus à une exposition à des niveaux très élevés. Pas de notion de durée. On compte simplement les événements qui induisent un dépassement des seuils réglementaires.

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## Le bruit, mesurer pour mieux prévenir

### Le bruit, mesurer pour mieux prévenir

**L<sub>ex,d</sub> dB(A) :**

■ Valeur Limite d'Exposition (VLE) à ne pas dépasser (pour comprise des protecteurs individuels) : L<sub>ex,8h</sub> = 87 dB(A) (ou L<sub>p,Crête</sub> = 140 dB(C))

■ Valeur d'exposition Supérieure déclenchant l'Action (VAS) - seuil de danger L<sub>ex,8h</sub> = 85 dB(A) (ou L<sub>p,Crête</sub> = 137 dB(C))

■ Valeur d'exposition Inférieure déclenchant l'Action (VAL) - seuil de précaution de danger L<sub>ex,8h</sub> = 80 dB(A) (ou L<sub>p,Crête</sub> = 135 dB(C))

Décret n° 2006-892 du 19 juillet 2006

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## Le bruit, mesurer pour mieux prévenir

### Le bruit, mesurer pour mieux prévenir

**La mesure normalisée d'exposition n'a d'intérêt que dans la zone de risque possible**

La réglementation n'impose pas de réaliser des mesures. Dans certains cas, déployer des méthodes d'évaluation sommaires peut suffire :

- Exemple : Test de communication
  - Devoir crier pour se faire comprendre à 1 m ⇒ **Risque certain**
  - Devoir crier pour se faire comprendre à 2 m ⇒ **Risque possible**
  - Parler normalement à 50 cm ⇒ **Pas de risque**

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## Le bruit, mesurer pour mieux prévenir

### Le bruit, mesurer pour mieux prévenir

**La mesure normalisée : La norme ISO 9612 (ex NFS 31 084)**

- Analyse du travail
- Constitution de groupes homogènes d'exposition GEH
  - Mesurage (sonomètre, exposimètre) :
    - par tâches, ou
    - par métiers, ou
    - par journées entières
  - Estimation de l'exposition et de son incertitude

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## L'éclairage, adapter la mesure à la situation rencontrée

Mesures sur des postes de travail à forte exigence visuelle :

→ Eclairement



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5.9.6	Tâche de peinture par exemple le passage décoratif, la peinture à la main	1.000	16	0.70	90	4 000 K ≤ $T_{op}$ ≤ 6 500 K
5.9.7	Fabrication de peinture préfabriquée symétrique	1.500	16	0.70	90	4 000 K ≤ $T_{op}$ ≤ 6 500 K

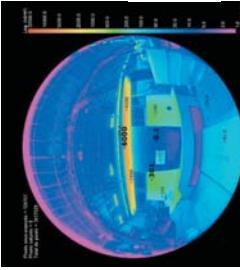
## L'éclairage, adapter la mesure à la situation rencontrée

Mesures sur des postes de travail à forte exigence visuelle :

→ Cartographie de luminances et indice UGR



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Éclairements mesurés (lux) : 1200 lux

|  |  | 5.9.6 | 5.9.7 | 5.9.8 | 5.9.9 | 5.9.10 | 5.9.11 | 5.9.12 | 5.9.13 | 5.9.14 | 5.9.15 | 5.9.16 | 5.9.17 | 5.9.18 | 5.9.19 | 5.9.20 | 5.9.21 | 5.9.22 | 5.9.23 | 5.9.24 | 5.9.25 | 5.9.26 | 5.9.27 | 5.9.28 | 5.9.29 | 5.9.30 | 5.9.31 | 5.9.32 | 5.9.33 | 5.9.34 | 5.9.35 | 5.9.36 | 5.9.37 | 5.9.38 | 5.9.39 | 5.9.40 | 5.9.41 | 5.9.42 | 5.9.43 | 5.9.44 | 5.9.45 | 5.9.46 | 5.9.47 | 5.9.48 | 5.9.49 | 5.9.50 | 5.9.51 | 5.9.52 | 5.9.53 | 5.9.54 | 5.9.55 | 5.9.56 | 5.9.57 | 5.9.58 | 5.9.59 | 5.9.60 | 5.9.61 | 5.9.62 | 5.9.63 | 5.9.64 | 5.9.65 | 5.9.66 | 5.9.67 | 5.9.68 | 5.9.69 | 5.9.70 | 5.9.71 | 5.9.72 | 5.9.73 | 5.9.74 | 5.9.75 | 5.9.76 | 5.9.77 | 5.9.78 | 5.9.79 | 5.9.80 | 5.9.81 | 5.9.82 | 5.9.83 | 5.9.84 | 5.9.85 | 5.9.86 | 5.9.87 | 5.9.88 | 5.9.89 | 5.9.90 | 5.9.91 | 5.9.92 | 5.9.93 | 5.9.94 | 5.9.95 | 5.9.96 | 5.9.97 | 5.9.98 | 5.9.99 | 5.9.100 | 5.9.101 | 5.9.102 | 5.9.103 | 5.9.104 | 5.9.105 | 5.9.106 | 5.9.107 | 5.9.108 | 5.9.109 | 5.9.110 | 5.9.111 | 5.9.112 | 5.9.113 | 5.9.114 | 5.9.115 | 5.9.116 | 5.9.117 | 5.9.118 | 5.9.119 | 5.9.120 | 5.9.121 | 5.9.122 | 5.9.123 | 5.9.124 | 5.9.125 | 5.9.126 | 5.9.127 | 5.9.128 | 5.9.129 | 5.9.130 | 5.9.131 | 5.9.132 | 5.9.133 | 5.9.134 | 5.9.135 | 5.9.136 | 5.9.137 | 5.9.138 | 5.9.139 | 5.9.140 | 5.9.141 | 5.9.142 | 5.9.143 | 5.9.144 | 5.9.145 | 5.9.146 | 5.9.147 | 5.9.148 | 5.9.149 | 5.9.150 | 5.9.151 | 5.9.152 | 5.9.153 | 5.9.154 | 5.9.155 | 5.9.156 | 5.9.157 | 5.9.158 | 5.9.159 | 5.9.160 | 5.9.161 | 5.9.162 | 5.9.163 | 5.9.164 | 5.9.165 | 5.9.166 | 5.9.167 | 5.9.168 | 5.9.169 | 5.9.170 | 5.9.171 | 5.9.172 | 5.9.173 | 5.9.174 | 5.9.175 | 5.9.176 | 5.9.177 | 5.9.178 | 5.9.179 | 5.9.180 | 5.9.181 | 5.9.182 | 5.9.183 | 5.9.184 | 5.9.185 | 5.9.186 | 5.9.187 | 5.9.188 | 5.9.189 | 5.9.190 | 5.9.191 | 5.9.192 | 5.9.193 | 5.9.194 | 5.9.195 | 5.9.196 | 5.9.197 | 5.9.198 | 5.9.199 | 5.9.200 | 5.9.201 | 5.9.202 | 5.9.203 | 5.9.204 | 5.9.205 | 5.9.206 | 5.9.207 | 5.9.208 | 5.9.209 | 5.9.210 | 5.9.211 | 5.9.212 | 5.9.213 | 5.9.214 | 5.9.215 | 5.9.216 | 5.9.217 | 5.9.218 | 5.9.219 | 5.9.220 | 5.9.221 | 5.9.222 | 5.9.223 | 5.9.224 | 5.9.225 | 5.9.226 | 5.9.227 | 5.9.228 | 5.9.229 | 5.9.230 | 5.9.231 | 5.9.232 | 5.9.233 | 5.9.234 | 5.9.235 | 5.9.236 | 5.9.237 | 5.9.238 | 5.9.239 | 5.9.240 | 5.9.241 | 5.9.242 | 5.9.243 | 5.9.244 | 5.9.245 | 5.9.246 | 5.9.247 | 5.9.248 | 5.9.249 | 5.9.250 | 5.9.251 | 5.9.252 | 5.9.253 | 5.9.254 | 5.9.255 | 5.9.256 | 5.9.257 | 5.9.258 | 5.9.259 | 5.9.260 | 5.9.261 | 5.9.262 | 5.9.263 | 5.9.264 | 5.9.265 | 5.9.266 | 5.9.267 | 5.9.268 | 5.9.269 | 5.9.270 | 5.9.271 | 5.9.272 | 5.9.273 | 5.9.274 | 5.9.275 | 5.9.276 | 5.9.277 | 5.9.278 | 5.9.279 | 5.9.280 | 5.9.281 | 5.9.282 | 5.9.283 | 5.9.284 | 5.9.285 | 5.9.286 | 5.9.287 | 5.9.288 | 5.9.289 | 5.9.290 | 5.9.291 | 5.9.292 | 5.9.293 | 5.9.294 | 5.9.295 | 5.9.296 | 5.9.297 | 5.9.298 | 5.9.299 | 5.9.300 | 5.9.301 | 5.9.302 | 5.9.303 | 5.9.304 | 5.9.305 | 5.9.306 | 5.9.307 | 5.9.308 | 5.9.309 | 5.9.310 | 5.9.311 | 5.9.312 | 5.9.313 | 5.9.314 | 5.9.315 | 5.9.316 | 5.9.317 | 5.9.318 | 5.9.319 | 5.9.320 | 5.9.321 | 5.9.322 | 5.9.323 | 5.9.324 | 5.9.325 | 5.9.326 | 5.9.327 | 5.9.328 | 5.9.329 | 5.9.330 | 5.9.331 | 5.9.332 | 5.9.333 | 5.9.334 | 5.9.335 | 5.9.336 | 5.9.337 | 5.9.338 | 5.9.339 | 5.9.340 | 5.9.341 | 5.9.342 | 5.9.343 | 5.9.344 | 5.9.345 | 5.9.346 | 5.9.347 | 5.9.348 | 5.9.349 | 5.9.350 | 5.9.351 | 5.9.352 | 5.9.353 | 5.9.354 | 5.9.355 | 5.9.356 | 5.9.357 | 5.9.358 | 5.9.359 | 5.9.360 | 5.9.361 | 5.9.362 | 5.9.363 | 5.9.364 | 5.9.365 | 5.9.366 | 5.9.367 | 5.9.368 | 5.9.369 | 5.9.370 | 5.9.371 | 5.9.372 | 5.9.373 | 5.9.374 | 5.9.375 | 5.9.376 | 5.9.377 | 5.9.378 | 5.9.379 | 5.9.380 | 5.9.381 | 5.9.382 | 5.9.383 | 5.9.384 | 5.9.385 | 5.9.386 | 5.9.387 | 5.9.388 | 5.9.389 | 5.9.390 | 5.9.391 | 5.9.392 | 5.9.393 | 5.9.394 | 5.9.395 | 5.9.396 | 5.9.397 | 5.9.398 | 5.9.399 | 5.9.400 | 5.9.401 | 5.9.402 | 5.9.403 | 5.9.404 | 5.9.405 | 5.9.406 | 5.9.407 | 5.9.408 | 5.9.409 | 5.9.410 | 5.9.411 | 5.9.412 | 5.9.413 | 5.9.414 | 5.9.415 | 5.9.416 | 5.9.417 | 5.9.418 | 5.9.419 | 5.9.420 | 5.9.421 | 5.9.422 | 5.9.423 | 5.9.424 | 5.9.425 | 5.9.426 | 5.9.427 | 5.9.428 | 5.9.429 | 5.9.430 | 5.9.431 | 5.9.432 | 5.9.433 | 5.9.434 | 5.9.435 | 5.9.436 | 5.9.437 | 5.9.438 | 5.9.439 | 5.9.440 | 5.9.441 | 5.9.442 | 5.9.443 | 5.9.444 | 5.9.445 | 5.9.446 | 5.9.447 | 5.9.448 | 5.9.449 | 5.9.450 | 5.9.451 | 5.9.452 | 5.9.453 | 5.9.454 | 5.9.455 | 5.9.456 | 5.9.457 | 5.9.458 | 5.9.459 | 5.9.460 | 5.9.461 | 5.9.462 | 5.9.463 | 5.9.464 | 5.9.465 | 5.9.466 | 5.9.467 | 5.9.468 | 5.9.469 | 5.9.470 | 5.9.471 | 5.9.472 | 5.9.473 | 5.9.474 | 5.9.475 | 5.9.476 | 5.9.477 | 5.9.478 | 5.9.479 | 5.9.480 | 5.9.481 | 5.9.482 | 5.9.483 | 5.9.484 | 5.9.485 | 5.9.486 | 5.9.487 | 5.9.488 | 5.9.489 | 5.9.490 | 5.9.491 | 5.9.492 | 5.9.493 | 5.9.494 | 5.9.495 | 5.9.496 | 5.9.497 | 5.9.498 | 5.9.499 | 5.9.500 | 5.9.501 | 5.9.502 | 5.9.503 | 5.9.504 | 5.9.505 | 5.9.506 | 5.9.507 | 5.9.508 | 5.9.509 | 5.9.510 | 5.9.511 | 5.9.512 | 5.9.513 | 5.9.514 | 5.9.515 | 5.9.516 | 5.9.517 | 5.9.518 | 5.9.519 | 5.9.520 | 5.9.521 | 5.9.522 | 5.9.523 | 5.9.524 | 5.9.525 | 5.9.526 | 5.9.527 | 5.9.528 | 5.9.529 | 5.9.530 | 5.9.531 | 5.9.532 | 5.9.533 | 5.9.534 | 5.9.535 | 5.9.536 | 5.9.537 | 5.9.538 | 5.9.539 | 5.9.540 | 5.9.541 | 5.9.542 | 5.9.543 | 5.9.544 | 5.9.545 | 5.9.546 | 5.9.547 | 5.9.548 | 5.9.549 | 5.9.550 | 5.9.551 | 5.9.552 | 5.9.553 | 5.9.554 | 5.9.555 | 5.9.556 | 5.9.557 | 5.9.558 | 5.9.559 | 5.9.560 | 5.9.561 | 5.9.562 | 5.9.563 | 5.9.564 | 5.9.565 | 5.9.566 | 5.9.567 | 5.9.568 | 5.9.569 | 5.9.570 | 5.9.571 | 5.9.572 | 5.9.573 | 5.9.574 | 5.9.575 | 5.9.576 | 5.9.577 | 5.9.578 | 5.9.579 | 5.9.580 | 5.9.581 | 5.9.582 | 5.9.583 | 5.9.584 | 5.9.585 | 5.9.586 | 5.9.587 | 5.9.588 | 5.9.589 | 5.9.590 | 5.9.591 | 5.9.592 | 5.9.593 | 5.9.594 | 5.9.595 | 5.9.596 | 5.9.597 | 5.9.598 | 5.9.599 | 5.9.600 | 5.9.601 | 5.9.602 | 5.9.603 | 5.9.604 | 5.9.605 | 5.9.606 | 5.9.607 | 5.9.608 | 5.9.609 | 5.9.610 | 5.9.611 | 5.9.612 | 5.9.613 | 5.9.614 | 5.9.615 | 5.9.616 | 5.9.617 | 5.9.618 | 5.9.619 | 5.9.620 | 5.9.621 | 5.9.622 | 5.9.623 | 5.9.624 | 5.9.625 | 5.9.626 | 5.9.627 | 5.9.628 | 5.9.629 | 5.9.630 | 5.9.631 | 5.9.632 | 5.9.633 | 5.9.634 | 5.9.635 | 5.9.636 | 5.9.637 | 5.9.638 | 5.9.639 | 5.9.640 | 5.9.641 | 5.9.642 | 5.9.643 | 5.9.644 | 5.9.645 | 5.9.646 | 5.9.647 | 5.9.648 | 5.9.649 | 5.9.650 | 5.9.651 | 5.9.652 | 5.9.653 | 5.9.654 | 5.9.655 | 5.9.656 | 5.9.657 | 5.9.658 | 5.9.659 | 5.9.660 | 5.9.661 | 5.9.662 | 5.9.663 | 5.9.664 | 5.9.665 | 5.9.666 | 5.9.667 | 5.9.668 | 5.9.669 | 5.9.670 | 5.9.671 | 5.9.672 | 5.9.673 | 5.9.674 | 5.9.675 | 5.9.676 | 5.9.677 | 5.9.678 | 5.9.679 | 5.9.680 | 5.9.681 | 5.9.682 | 5.9.683 | 5.9.684 | 5.9.685 | 5.9.686 | 5.9.687 | 5.9.688 | 5.9.689 | 5.9.690 | 5.9.691 | 5.9.692 | 5.9.693 | 5.9.694 | 5.9.695 | 5.9.696 | 5.9.697 | 5.9.698 | 5.9.699 | 5.9.700 | 5.9.701 | 5.9.702 | 5.9.703 | 5.9.704 | 5.9.705 | 5.9.706 | 5.9.707 | 5.9.708 | 5.9.709 | 5.9.710 | 5.9.711 | 5.9.712 | 5.9.713 | 5.9.714 | 5.9.715 | 5.9.716 | 5.9.717 | 5.9.718 | 5.9.719 | 5.9.720 | 5.9.721 | 5.9.722 | 5.9.723 | 5.9.724 | 5.9.725 | 5.9.726 | 5.9.727 | 5.9.728 | 5.9.729 | 5.9.730 | 5.9.731 | 5.9.732 | 5.9.733 | 5.9.734 | 5.9.735 | 5.9.736 | 5.9.737 | 5.9.738 | 5.9.739 | 5.9.740 | 5.9.741 | 5.9.742 | 5.9.743 | 5.9.744 | 5.9.745 | 5.9.746 | 5.9.747 | 5.9.748 | 5.9.749 | 5.9.750 | 5.9.751 | 5.9.752 | 5.9.753 | 5.9.754 | 5.9.755 | 5.9.756 | 5.9.757 | 5.9.758 | 5.9.759 | 5.9.760 | 5.9.761 | 5.9.762 | 5.9.763 | 5.9.764 | 5.9.765 | 5.9.766 | 5.9.767 | 5.9.768 | 5.9.769 | 5.9.770 | 5.9.771 | 5.9.772 | 5.9.773 | 5.9.774 | 5.9.775 | 5.9.776 | 5.9.777 | 5.9.778 | 5.9.779 | 5.9.780 | 5.9.781 | 5.9.782 | 5.9.783 | 5.9.784 | 5.9.785 | 5.9.786 | 5.9.787 | 5.9.788 | 5.9.789 | 5.9.790 | 5.9.791 | 5.9.792 | 5.9.793 | 5.9.794 | 5.9.795 | 5.9.796 | 5.9.797 | 5.9.798 | 5.9.799 | 5.9.800 | 5.9.801 | 5.9.802 | 5.9.803 | 5.9.804 | 5.9.805 | 5.9.806 | 5.9.807 | 5.9.808 | 5.9.809 | 5.9.810 | 5.9.811 | 5.9.812 | 5.9.813 | 5.9.814 | 5.9.815 | 5.9.816 | 5.9.817 | 5.9.818 | 5.9.819 | 5.9.820 | 5.9.821 | 5.9.822 | 5.9.823 | 5.9.824 | 5.9.825 | 5.9.826 | 5.9.827 | 5.9.828 | 5.9.829 | 5.9.830 | 5.9.831 | 5.9.832 | 5.9.833 | 5.9.834 | 5.9.835 | 5.9.836 | 5.9.837 | 5.9.838 | 5.9.839 | 5.9.840 | 5.9.841 | 5.9.842 | 5.9.843 | 5.9.844 | 5.9.845 | 5.9.846 | 5.9.847 | 5.9.848 |
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