

**Prof. Dr. med. H. Drexler**  
**Institute and Outpatient Clinic for Occupational, Social and Environmental Medicine of**  
**the University of Erlangen-Nuremberg**  
**Henkestr. 9-11, D-91054 Erlangen**

Intercomparison programme 66, 2020 for toxicological analyses in biological materials

Inst. für Arbeits-, Sozial- und Umweltmedizin, Henkestr. 9-11, 91054 Erlangen

Shimadzu Techno-Research, Inc.  
 Technical Center, Testing and Analysis Division  
 1, Nishinokyo-Shimoaicho, Nakagyoku  
 604-8436 Kyoto-City, Kyoto Pref.  
 Japan

**Labor: 329**

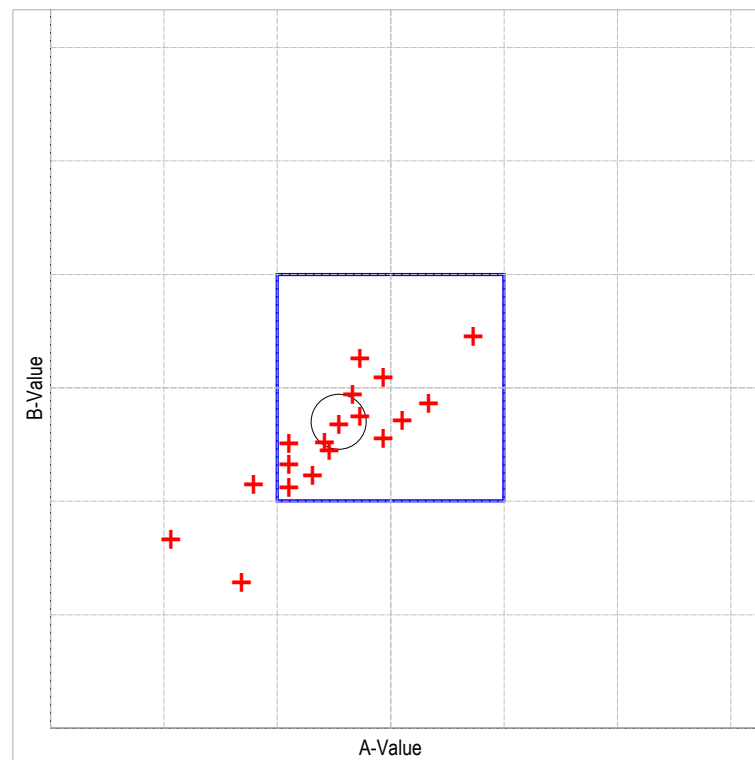


Erlangen, 2021/01/13

## Youden Plot

| No. | parameter     | evaluation   | your results  | ref. value    | tolerance range              | unit         |
|-----|---------------|--------------|---------------|---------------|------------------------------|--------------|
| 11  | As+3 in urine | A: +<br>B: + | 2.31<br>13.26 | 2.53<br>13.90 | 2.05 - 3.01<br>11.77 - 16.03 | µg/l<br>µg/l |

As+3 in urine (Occupational medical field)



○ your values  
 □ tolerance range  
 + participants

|                                           | A    | B                |
|-------------------------------------------|------|------------------|
| number of participants                    | 19   | 19               |
| within 3-fold tolerance range             | 19   | 18               |
| mean of 3-fold tolerance range            | 2.24 | 12.94            |
| standard deviation 3-fold tolerance range | 0.30 | 1.10             |
| both values within tolerance range        |      | 15 Labs; (78.9%) |

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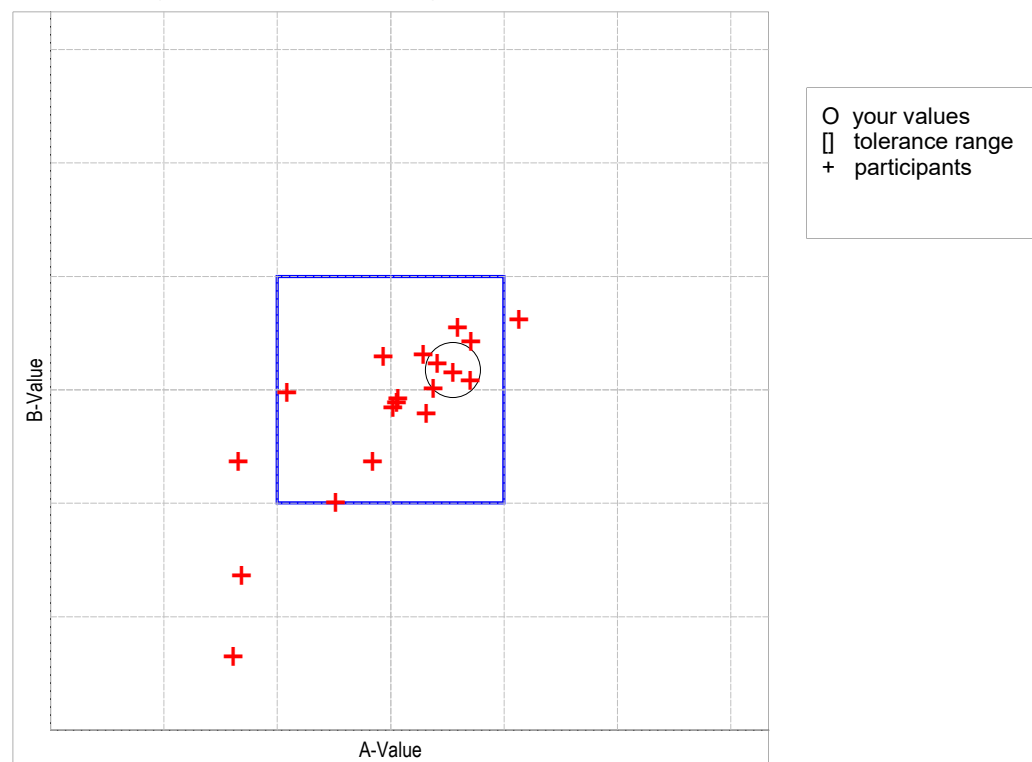


Erlangen, 2021/01/13

## Youden Plot

| No. | parameter     | evaluation   | your results  | ref. value    | tolerance range              | unit         |
|-----|---------------|--------------|---------------|---------------|------------------------------|--------------|
| 12  | As+5 in urine | A: +<br>B: + | 4.36<br>14.09 | 3.85<br>13.61 | 2.92 - 4.78<br>10.82 - 16.40 | µg/l<br>µg/l |

As+5 in urine (Occupational medical field)



|                                           | A    | B                |
|-------------------------------------------|------|------------------|
| number of participants                    | 19   | 19               |
| within 3-fold tolerance range             | 19   | 19               |
| mean of 3-fold tolerance range            | 3.83 | 13.04            |
| standard deviation 3-fold tolerance range | 0.67 | 2.10             |
| both values within tolerance range        |      | 15 Labs; (78.9%) |

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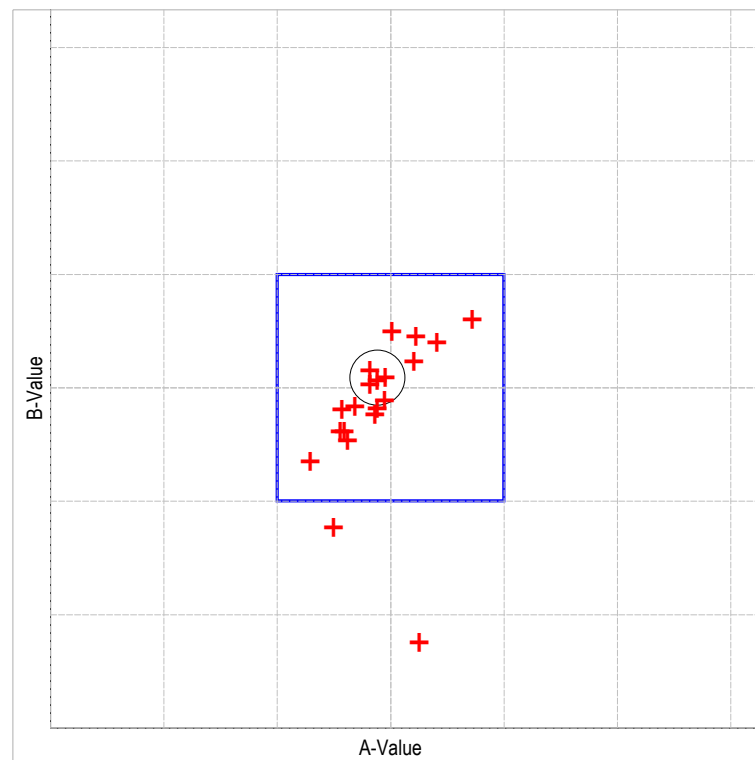


Erlangen, 2021/01/13

## Youden Plot

| No. | parameter    | evaluation   | your results  | ref. value    | tolerance range              | unit         |
|-----|--------------|--------------|---------------|---------------|------------------------------|--------------|
| 13  | MMA in urine | A: +<br>B: + | 5.10<br>18.64 | 5.28<br>18.28 | 3.75 - 6.81<br>14.23 - 22.33 | µg/l<br>µg/l |

MMA in urine (Occupational medical field)



○ your values  
 □ tolerance range  
 + participants

|                                           | A    | B                |
|-------------------------------------------|------|------------------|
| number of participants                    | 20   | 20               |
| within 3-fold tolerance range             | 20   | 20               |
| mean of 3-fold tolerance range            | 5.11 | 17.60            |
| standard deviation 3-fold tolerance range | 0.51 | 2.64             |
| both values within tolerance range        |      | 18 Labs; (90.0%) |

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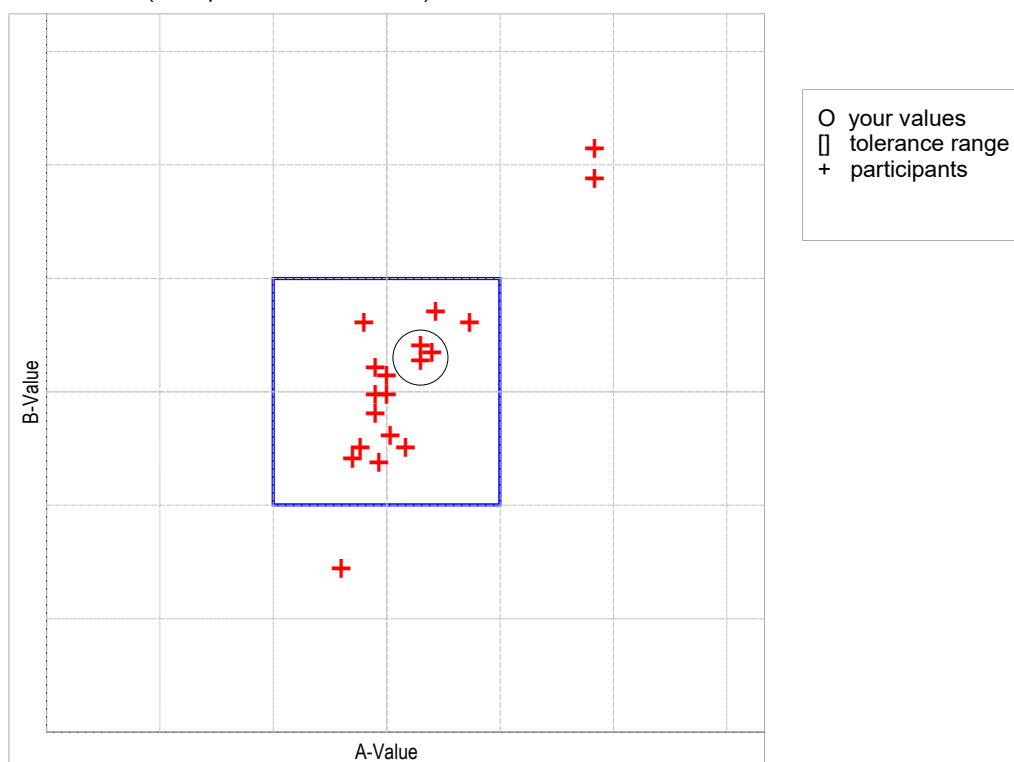


Erlangen, 2021/01/13

## Youden Plot

| No. | parameter    | evaluation   | your results | ref. value   | tolerance range            | unit         |
|-----|--------------|--------------|--------------|--------------|----------------------------|--------------|
| 14  | DMA in urine | A: +<br>B: + | 22.0<br>89.8 | 21.0<br>86.5 | 17.7 - 24.3<br>75.7 - 97.3 | µg/l<br>µg/l |

DMA in urine (Occupational medical field)



|                                           | A    | B                |
|-------------------------------------------|------|------------------|
| number of participants                    | 20   | 20               |
| within 3-fold tolerance range             | 19   | 19               |
| mean of 3-fold tolerance range            | 21.8 | 88.4             |
| standard deviation 3-fold tolerance range | 2.0  | 9.0              |
| both values within tolerance range        |      | 16 Labs; (80.0%) |

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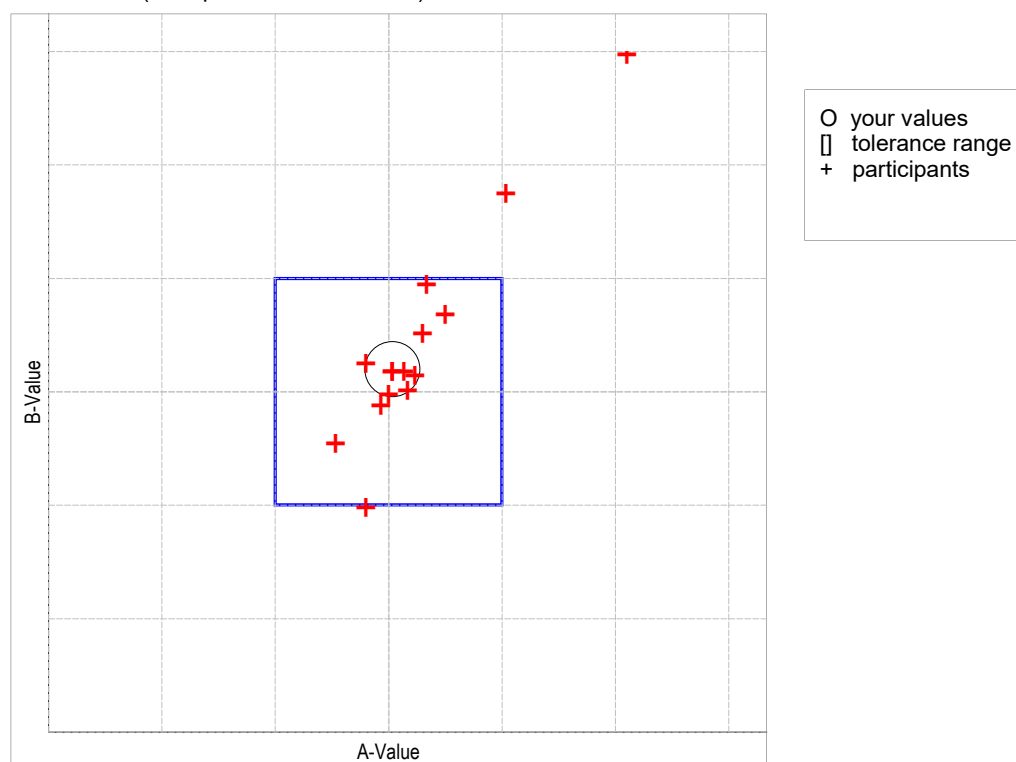


Erlangen, 2021/01/13

## Youden Plot

| No. | parameter    | evaluation   | your results | ref. value   | tolerance range            | unit         |
|-----|--------------|--------------|--------------|--------------|----------------------------|--------------|
| 177 | AsB in urine | A: +<br>B: + | 15.7<br>54.6 | 15.6<br>53.5 | 13.2 - 18.0<br>47.5 - 59.5 | µg/l<br>µg/l |

AsB in urine (Occupational medical field)



|                                           | A    | B                |
|-------------------------------------------|------|------------------|
| number of participants                    | 15   | 15               |
| within 3-fold tolerance range             | 15   | 15               |
| mean of 3-fold tolerance range            | 16.2 | 56.1             |
| standard deviation 3-fold tolerance range | 0.8  | 3.7              |
| both values within tolerance range        |      | 13 Labs; (86.7%) |



German External Quality Assessment Scheme

**Intercomparison programme 66, 2020  
for toxicological analyses in biological materials**

**Prof. Dr. med. H. Drexler**

**on behalf of the German Society for Occupational and Environmental Medicine .e.V**

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External Quality Control acc. to the Guidelines of the German Federal Medical Council

Participant: Shimadzu Techno-Research, Inc.  
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## **Certificate**

**valid until January 31, 2022**

This is to certify you participated in the intercomparison programme 66 / 2020 for occupational / environmental medical - toxicological analyses. In accordance with the guidelines issued by the German Federal Medical Council (Bundesärztekammer) of September 19th, 2014 on implementation of intercomparison programmes in the medical field you have fulfilled the requirements for the following parameters:

### **Occupational medical field**

As+3 in urine  
DMA in urine

As+5 in urine  
AsB in urine

MMA in urine

Erlangen, 2021/01/13

Prof. Dr. med. H. Drexler

Prof. Dr. rer. nat. Th. Göen