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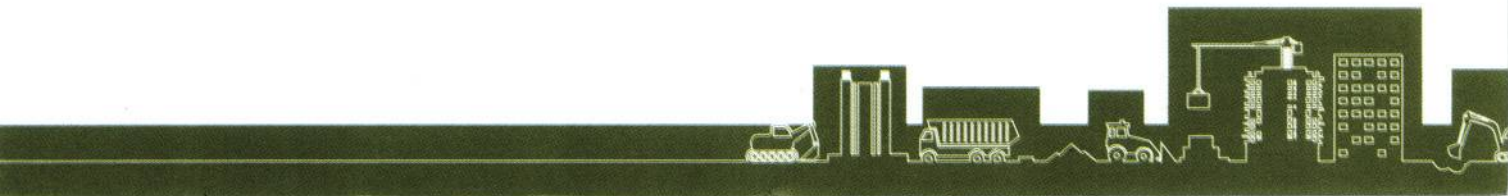
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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



রাষ্ট্রপতি

গণপ্রজাতন্ত্রী বাংলাদেশ

ঢাকা।

২৬ জ্যৈষ্ঠ ১৪২৪

০৯ জুন ২০১৭



বাণী

বাংলাদেশ এ্যাক্রেডিটেশন বোর্ড (বিএবি) বিশ্বের অন্যান্য দেশের ন্যায় এবারও 'বিশ্ব এ্যাক্রেডিটেশন দিবস' যথাযথ মর্যাদার সাথে পালন করছে জেনে আমি আনন্দিত।

নির্মাণ শিল্পের সাথে জড়িত পরিকল্পক, স্থাপত্যবিদ, নির্মাণ প্রকৌশলী, ঠিকাদার, উৎপাদক এবং সর্বোপরি নিয়ন্ত্রক সংস্থাসমূহের সহায়তা প্রদানই এ বছরের বিশ্ব এ্যাক্রেডিটেশন দিবসের লক্ষ্য। এ প্রেক্ষিতে বিশ্ব এ্যাক্রেডিটেশন দিবসের প্রতিপাদ্য- "Accreditation: Delivering confidence in construction and the built environment" খুবই সময়োপযোগী বলে আমি মনে করি। নির্মাণ শিল্প একটি জটিল ও অত্যন্ত প্রতিযোগিতামূলক খাত। নির্মাণ প্রকৌশলের উন্নয়ন, নিরাপদ নির্মাণ পরিবেশ বজায় রাখাসহ নির্মাণ খরচ কমানোর মাধ্যমে এ খাতে জনগণের আস্থা বাড়াতে হবে। নির্মাণ ঝুঁকি নিয়ন্ত্রণ, সম্পদের সঠিক ও দক্ষ ব্যবহার, নিয়ন্ত্রক অনুবর্তিতা পালন, সরবরাহ-শৃঙ্খলাসহ আস্থা অর্জনের ক্ষেত্রে এ্যাক্রেডিটেশন এ শিল্পকে প্রয়োজনীয় সহায়তা প্রদান করতে পারে।

আন্তর্জাতিক মান বজায় রেখে বিভিন্ন পরীক্ষাগার, সনদ প্রদানকারী সংস্থা, পরিদর্শন সংস্থাকে এ্যাক্রেডিটেশন প্রদানের ফলে দেশীয় পণ্য ও সেবা প্রদানকারী প্রতিষ্ঠানসমূহের উপর দেশী-বিদেশী ভোক্তাদের আস্থা ক্রমশ বৃদ্ধি পাচ্ছে। স্বচ্ছতা বজায় রেখে দ্রুত ও বিশ্বস্ততার সাথে নির্মাণ কাজ সম্পাদন করা সম্ভব হলে এ খাতে জনগণের বিশেষ করে ক্রেতাদের আস্থা বৃদ্ধি পাবে এবং বিনিয়োগ ত্বরান্বিত হবে।

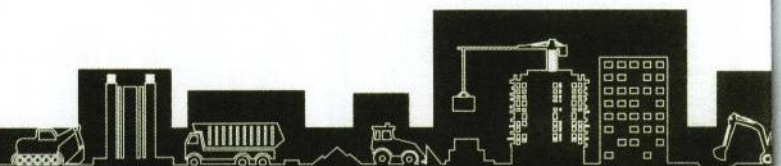
আমি 'বিশ্ব এ্যাক্রেডিটেশন দিবস-২০১৭' এর সাফল্য কামনা করি।

খোদা হাফেজ, বাংলাদেশ চিরজীবী হোক।

মোঃ আবদুল হামিদ



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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

প্রধানমন্ত্রী
গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
২৬ জ্যৈষ্ঠ ১৪২৪
০৯ জুন ২০১৭



বাণী

বিশ্বের অন্যান্য দেশের মত বাংলাদেশেও ৯ জুন ২০১৭ 'বিশ্ব এ্যাক্রেডিটেশন দিবস' পালন করা হচ্ছে জেনে আমি আনন্দিত। এ উপলক্ষে আমি বাংলাদেশ এ্যাক্রেডিটেশন বোর্ডসহ সকল উন্নয়ন সহযোগী সংস্থা ও সুবিধাভোগীদের শুভেচ্ছা জানাচ্ছি।

দিবসটির এবারের প্রতিপাদ্য "Accreditation :Delivering confidence in construction and the built environment " সময়োপযোগী হয়েছে বলে আমি মনে করি।

বিশ্বব্যাপী অর্থনৈতিক উন্নয়ন, কর্মসংস্থান, নিরাপদ আবাসন এবং পরিবেশ সুরক্ষাসহ জাতীয় ভৌত অবকাঠামো তৈরিতে নির্মাণ শিল্পের ভূমিকা অনস্বীকার্য। ডিজিটাইজেশনের ফলে আধুনিক প্রযুক্তির ব্যবহার এ শিল্পের অগ্রগতিকে ত্বরান্বিত করেছে। নির্মাণ ভাবনা ও নির্মাণ শৈলীতে পরিবর্তন এসেছে। ভারসাম্য ভৌত অবকাঠামো উন্নয়নের লক্ষ্যে নির্মাণ পরিকল্পনায় নিরাপত্তা এবং পরিবেশ সুরক্ষার মত জনগুরুত্বপূর্ণ বিষয়গুলো সক্রিয় বিবেচনায় আনা প্রয়োজন। এ্যাক্রেডিটেশন বোর্ড এক্ষেত্রে কার্যকর ভূমিকা পালন করে থাকে।

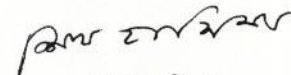
এ্যাক্রেডিটেশন কারিগরি বাণিজ্য বাধা অপসারণের আন্তর্জাতিকভাবে স্বীকৃত পদ্ধতি। এ্যাক্রেডিটেশন নিরাপদ এবং স্বাস্থ্যকর কর্মপরিবেশ, পরিবেশ রক্ষা, খাদ্য নিরাপত্তা ব্যবস্থাপনা, নিরাপদ তথ্য ব্যবস্থাপনা এবং জাতীয় মান অবকাঠামো উন্নয়নে রাষ্ট্রীয় নিয়ন্ত্রক সংস্থার কাজে সহায়তা করে থাকে। বিশ্বায়নের ফলে সৃষ্ট সম্ভাবনাকে কাজে লাগিয়ে দেশে উৎপাদিত পণ্য ও সেবার রপ্তানি বৃদ্ধিতে এ্যাক্রেডিটেশন গুরুত্বপূর্ণ ভূমিকা পালন করতে পারে।

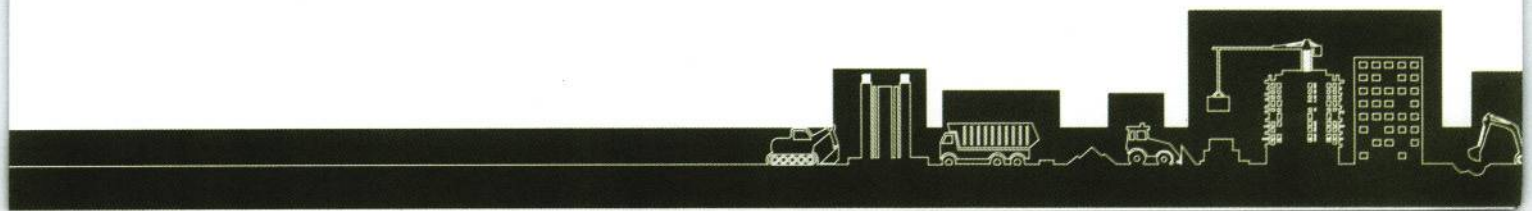
আমরা জাতিসংঘ ঘোষিত 'টেকসই উন্নয়ন লক্ষ্যমাত্রা' বাস্তবায়নে প্রয়োজনীয় পদক্ষেপ গ্রহণ করেছি। পারস্পরিক অংশীদারিত্বের ভিত্তিতে সকলের জন্য নিরাপদ আবাসন ও কর্মপরিবেশ নিশ্চিত করতে আমরা বিভিন্ন কার্যক্রম বাস্তবায়ন করে যাচ্ছি।

আমি আশা করি, বাংলাদেশ এ্যাক্রেডিটেশন বোর্ড সরকারি নীতি নির্ধারণ, জাতীয় মান অবকাঠামো উন্নয়ন এবং দেশের রপ্তানী বাণিজ্যকে আরও সম্প্রসারণ ও গতিশীল করতে তাৎপর্যপূর্ণ অবদান রাখবে।

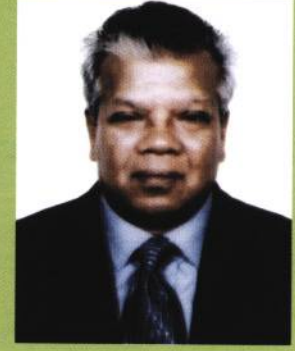
আমি 'বিশ্ব এ্যাক্রেডিটেশন দিবস ২০১৭' উপলক্ষে গৃহীত সকল কর্মসূচির সার্বিক সাফল্য কামনা করছি।

জয় বাংলা, জয় বঙ্গবন্ধু
বাংলাদেশ চিরজীবি হোক।


শেখ হাসিনা



মন্ত্রী
শিল্প মন্ত্রণালয়
গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
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বাণী

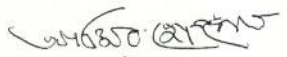
বাংলাদেশ অ্যাক্রেডিটেশন বোর্ডের (বিএবি) উদ্যোগে ৯ জুন “বিশ্ব অ্যাক্রেডিটেশন দিবস-২০১৭” উদযাপন করা হচ্ছে জেনে আমি আনন্দিত। এ মহতী উদ্যোগের সাথে জড়িত সকলের প্রতি আমার আন্তরিক অভিনন্দন রইল।

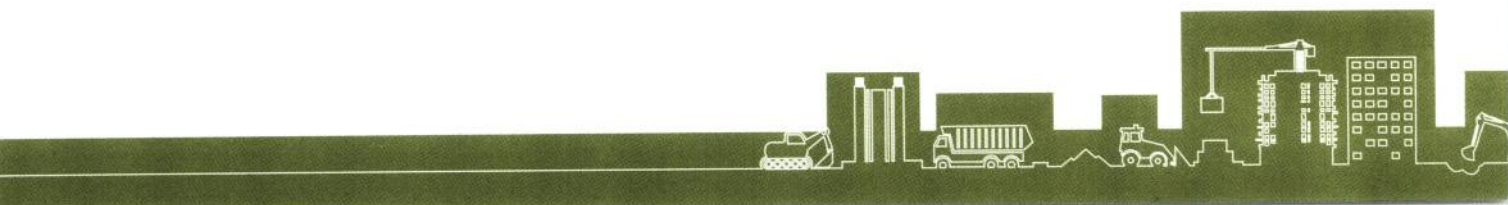
এ বছর বিশ্ব অ্যাক্রেডিটেশন দিবসের প্রতিপাদ্য বিষয় নির্ধারণ করা হয়েছে, “**Accreditation: Delivering confidence in construction and the built environment**”। এর মানে হচ্ছে, “অ্যাক্রেডিটেশন: নির্মাণ ও নির্মিত পরিবেশে আস্থা প্রদান করে”। বাংলাদেশের বিকাশমান অর্থনীতি ও শিল্পায়নের ক্ষেত্রে প্রতিপাদ্য বিষয়টি অত্যন্ত তাৎপর্যপূর্ণ বলে আমি মনে করি।

নির্মাণ শিল্প মানব সভ্যতার একটি গুরুত্বপূর্ণ অনুষঙ্গ। যে কোনো দেশের অর্থনৈতিক সক্ষমতা বৃদ্ধির সাথে সাথে নির্মাণ শিল্পও বিকশিত হয়ে থাকে। বিশ্ব ব্যাংকের সাম্প্রতিক মূল্যায়নে বাংলাদেশ নিম্ন-মধ্যম আয়ের দেশ হিসেবে স্বীকৃতি পেয়েছে। বর্তমানে জনগণের মাথাপিছু আয় ১৪৭০ মার্কিন ডলারে উন্নীত হয়েছে। বৈদেশিক মুদ্রার রিজার্ভ ২৯ বিলিয়ন মার্কিন ডলার ছাড়িয়ে গেছে। অর্থনৈতিক সক্ষমতার সাথে পাওয়া দিয়ে বাংলাদেশে এখন নির্মাণ শিল্পখাত দ্রুত বিকশিত হচ্ছে। দেশব্যাপী পদ্মা সেতু, আন্তর্জাতিক বিমান বন্দর, সরকারি-বেসরকারি আবাসন প্রকল্প, বহুতল ভবন ও বেশকিছু ফ্লাইওভারের মত বড় বড় নির্মাণ প্রকল্পের কাজ এগিয়ে চলেছে। সরকারি ও বেসরকারি পর্যায়ে বাস্তবায়নাধীন এসব মেগা প্রজেক্ট বাংলাদেশে নির্মাণ শিল্প বিকাশের অপার সুযোগ এনে দিয়েছে। এ সুযোগ কাজে লাগাতে দেশেই আন্তর্জাতিক মানের নির্মাণ উপকরণ, যন্ত্রপাতি ও প্রযুক্তি উদ্ভাবন করা জরুরি।

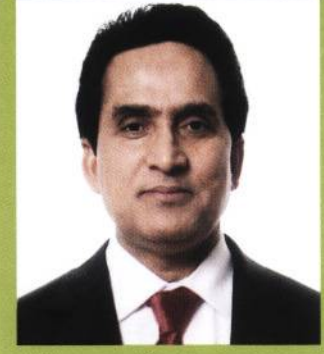
সম্প্রতি নগরভিত্তিক নির্মাণে রি-ইনফোর্স কনক্রিট (আরসি) স্ট্রাকচার ব্যবহৃত হচ্ছে। এর জন্য মানসম্মত স্টিল, সিমেন্ট, পাথর, বালি ও ইটের প্রয়োজন। ইতোমধ্যে দেশেই বিশ্বমানের বেশ কিছু নির্মাণ সামগ্রী প্রস্তুতকারী প্রতিষ্ঠান গড়ে ওঠেছে। এসব প্রতিষ্ঠানে উৎপাদিত নির্মাণ সামগ্রী দেশের চাহিদা মিটিয়ে বিদেশে রপ্তানি হচ্ছে। নির্মাণ শিল্পখাতের উদ্যোক্তাদের মাঝে পণ্যের পরীক্ষণ ও মান নিয়ন্ত্রণ সম্পর্কিত সচেতনতা বাড়িয়ে এখাতে বাংলাদেশকে স্বয়ংসম্পূর্ণ করা সম্ভব। এবারের বিশ্ব অ্যাক্রেডিটেশন দিবস-২০১৭ উদযাপন এ লক্ষ্য অর্জনে অত্যন্ত সহায়ক হবে। এর মাধ্যমে উদ্যোক্তা ও ক্রেতা নির্বিশেষে সকলের মধ্যে পরিবেশবান্ধব নির্মাণ উপকরণ, সবুজ প্রযুক্তি ও যন্ত্রপাতির ব্যবহার করে নিরাপদ আবাসন ও সুরক্ষিত ভৌত অবকাঠামো তৈরির প্রয়াস বেগবান হবে বলে আমার বিশ্বাস।

আমি বিশ্ব অ্যাক্রেডিটেশন দিবস-২০১৭ উপলক্ষে বিএবি আয়োজিত অনুষ্ঠানের সাফল্য কামনা করছি।


আমির হোসেন আমু, এম.পি



সিনিয়র সচিব
শিল্প মন্ত্রণালয়
গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
২৬ জ্যৈষ্ঠ ১৪২৪
০৯ জুন ২০১৭



বাণী

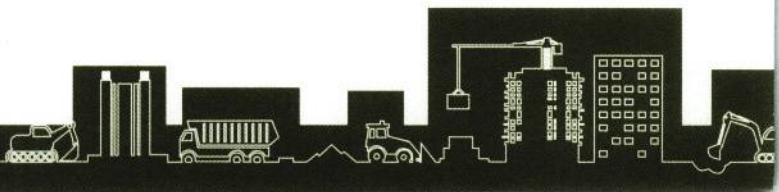
সারা বিশ্বের ন্যায় বাংলাদেশেও বাংলাদেশ এ্যাক্রেডিটেশন বোর্ড (বিএবি) কর্তৃক ০৯ জুন “বিশ্ব এ্যাক্রেডিটেশন দিবস-২০১৭” উদযাপন উপলক্ষে বিভিন্ন কর্মসূচি গ্রহণ করছে জেনে আমি আনন্দিত। মুক্ত বাজার অর্থনীতির প্রতিযোগিতামূলক বিশ্ববাজারে বাণিজ্যের প্রসার এবং ভোক্তাদের মাঝে সচেতনতা সৃষ্টি করতে এ্যাক্রেডিটেশন একটি অপরিহার্য নিয়ামক।

এ বছর বিশ্ব এ্যাক্রেডিটেশন দিবসের প্রতিপাদ্য বিষয় “Accreditation: Delivering confidence in construction and the built environment” তাৎপর্যপূর্ণ ও সময়োপযোগী হয়েছে বলে আমি মনে করি। জাতিসংঘ ঘোষিত টেকসই উন্নয়ন লক্ষ্যমাত্রা (এসডিজি) অর্জনে কার্যকর পদক্ষেপ নিতে এ বছরের প্রতিপাদ্য বিষয়টি অতীব গুরুত্বপূর্ণ। দেশে উৎপাদিত পণ্য ও সেবা গুণগুণি এবং বহির্বিশ্ব হতে আমদানির ক্ষেত্রে পণ্য ও সেবার কাঙ্ক্ষিত মান নিশ্চিতকরণে বিভিন্ন ল্যাবরেটরি, সনদ প্রদানকারী সংস্থা, পরিদর্শন সংস্থা ইত্যাদি গুরুত্বপূর্ণ ভূমিকা পালন করছে।

বিশ্বব্যাপী অর্থনৈতিক উন্নয়ন, কর্মসংস্থান, নিরাপদ আবাসন এবং পরিবেশ সুরক্ষাসহ জাতীয় ভৌত অবকাঠামো তৈরিতে নির্মাণ শিল্পের ভূমিকা অতীব গুরুত্বপূর্ণ। সময়ের সাথে চাহিদার প্রেক্ষিতে প্রতিনিয়ত পরিবর্তিত হচ্ছে নির্মাণ কার্যক্রম এবং নির্মাণ শৈলী। ডিজিটাইজেশনের ফলে অত্যাধুনিক ও বহুমাত্রিক প্রযুক্তির ব্যবহার এ শিল্পের অগ্রগতিকে আরও ত্বরান্বিত করেছে। ফলে একদিকে যেমন নির্মাণ শিল্পে এসেছে অভূতপূর্ব গতিশীলতা, অন্যদিকে সৃষ্টি হচ্ছে বহুবিধ স্বাস্থ্য, পরিবেশ ও নিরাপত্তাগত ঝুঁকি ও সমস্যা। পরিবেশগত সমস্যা এখন আর কোন নির্দিষ্ট ভূখণ্ডে সীমাবদ্ধ নেই, বৈশ্বিক সমস্যায় রূপ নিয়েছে। কাজেই ভৌত অবকাঠামো উন্নয়নের লক্ষ্যে ভারসাম্য বজায় রাখতে নির্মাণ পরিকল্পনায় নিরাপত্তা এবং পরিবেশ সুরক্ষার মত জনগুরুত্বপূর্ণ বিষয়গুলো সক্রিয় বিবেচনায় আনতে হবে। এবারের বিশ্ব এ্যাক্রেডিটেশন দিবস উদযাপন এ বিষয়ে জনসচেতনতা সৃষ্টিতে গুরুত্বপূর্ণ অবদান রাখবে বলে আমি মনে করি।

আমি “বিশ্ব এ্যাক্রেডিটেশন দিবস-২০১৭”-এর সাফল্য কামনা করছি।

(মো: মোশাররফ হোসেন ভূইয়া এনডিসি)



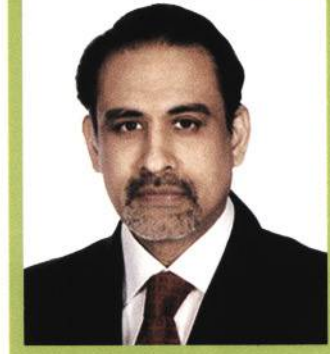
সভাপতি

ঢাকা চেম্বার অব কমার্স অ্যান্ড ইন্ডাস্ট্রি

(ডিসিসিআই)

২৬ জ্যৈষ্ঠ ১৪২৪

০৯ জুন ২০১৭



বাণী

বাংলাদেশ এ্যাক্রেডিটেশন বোর্ড (বিএবি) আগামী ০৯ জুন, ২০১৭ বিশ্ব এ্যাক্রেডিটেশন দিবস উদযাপন করতে যাচ্ছে জেনে আমি অত্যন্ত আনন্দিত।

বিশ্ব এ্যাক্রেডিটেশন দিবস ২০১৭ এর মূল প্রতিপাদ্য বিষয় হচ্ছেঃ "Accreditation: Delivering confidence in construction and the built environment". এবারের প্রতিপাদ্য বিষয়টি অত্যন্ত সমন্বিত ও গুরুত্বপূর্ণ বলে আমি মনে করি। এ্যাক্রেডিটেশন কিভাবে নির্মাণ শিল্পের সাথে সম্পৃক্ত নির্মাতা, উৎপাদক, ডিজাইনার, স্থপতি, সিভিল ইঞ্জিনিয়ার এবং নীতিনির্ধারকদের সহায়তা করতে পারে তার উপর বিশেষ আলোকপাত করেছে এ বছরের প্রতিপাদ্য বিষয়টি।

আধুনিক অবকাঠামো বা ভবন নির্মাণ প্রক্রিয়ার ক্ষেত্রে এ্যাক্রেডিটেশন এমনই একটি ব্যবস্থা, যার মাধ্যমে নির্মাণ সামগ্রী, নির্মাণ পন্থা, নির্মাণ প্রক্রিয়া, নির্মাণ স্থানের নিরাপত্তা, পরিবেশগত প্রভাব এবং প্রযুক্তির ব্যবহারকে সঠিক মানদণ্ডে পরিমাপ করা যায়। এ্যাক্রেডিটেশন নির্মাণখাতে ঝুঁকি মোকাবেলা, দক্ষতা উন্নয়ন এবং কার্যকরী সাপ্লাই চেইন ব্যবস্থাপনাকেই ত্বরান্বিত করে থাকে। এ্যাক্রেডিটেশন প্রক্রিয়া, প্রকল্প এলাকায় নিরাপদ কর্মপরিবেশ সৃষ্টিতে সহায়ক। এমনকি নির্মাণ সামগ্রী প্রস্তুতকারী প্রতিষ্ঠানের ক্ষেত্রে সঠিক মান, পরিমাপ, উৎপাদন ব্যয় হ্রাস, গুণগতমান সম্পন্ন পণ্য উৎপাদন, প্রতিযোগী রপ্তানি বাজার সম্প্রসারণ, নীতি নির্ধারণ প্রক্রিয়া সহজীকরণে বিশেষ ভূমিকা রাখতে পারে। টেকসই, পরিবেশবান্ধব, নিরাপদ ও মানসম্পন্ন অবকাঠামো উন্নয়ন বা ভবন নির্মাণের স্বার্থে এ্যাক্রেডিটেশনের ব্যবহারকে সুনিশ্চিত করা প্রয়োজন। এক্ষেত্রে বাংলাদেশ এ্যাক্রেডিটেশন বোর্ড (বিএবি) কে অগ্রণী ভূমিকা পালন করতে হবে।

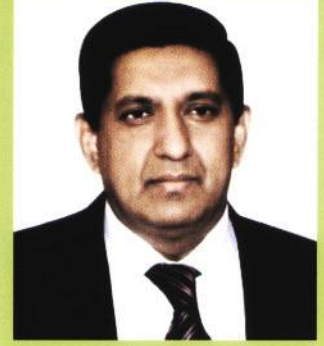
প্রতিবছরে ন্যায় এবছরও ঢাকা চেম্বার অব কমার্স অ্যান্ড ইন্ডাস্ট্রি (ডিসিসিআই) এর সাথে যৌথভাবে বিশ্ব এ্যাক্রেডিটেশন দিবস ২০১৭ উদযাপনের সিদ্ধান্ত গ্রহণের জন্য বাংলাদেশ এ্যাক্রেডিটেশন বোর্ডকে আন্তরিক ধন্যবাদ জানাচ্ছি এবং দিবসটির সাফল্য কামনা করছি।

আবুল কাসেম খান

সভাপতি

ঢাকা চেম্বার অব কমার্স অ্যান্ড ইন্ডাস্ট্রি (ডিসিসিআই)

মহাপরিচালক
বাংলাদেশ এ্যাক্রেডিটেশন বোর্ড
২৬ জ্যৈষ্ঠ ১৪২৪
০৯ জুন ২০১৭



বাংলাদেশে এ্যাক্রেডিটেশনের ভবিষ্যত প্রবণতা

পণ্য ও সেবার মানের নিশ্চয়তা বিধানের জন্য এ্যাক্রেডিটেশন ব্যবস্থা বিশ্বব্যাপী একটি স্বীকৃত ও গ্রহণযোগ্য পদ্ধতি। জ্ঞানভিত্তিক সমাজ বিনির্মাণের অভিযাত্রা জোরদারের সাথে সাথে গোটা বিশ্বে দিন দিন এ্যাক্রেডিটেশনের ওপর আস্থা বাড়ছে।

এ্যাক্রেডিটেশন ব্যবস্থার সাথে মান (Standard), পরিমাপ (Metrology) ক্যালিব্রেশন ও টেস্টিং ইত্যাদির সম্পর্ক গভীরভাবে জড়িত। বাংলাদেশে মান ব্যবস্থাপনা, খাদ্য-দ্রব্য, হালাল ফুড, মেডিকেল ও টেক্সটাইল টেস্টিং ল্যাবরেটরি, জাহাজ ভাঙা ও নির্মাণ শিল্পের ক্ষেত্রে এ্যাক্রেডিটেশনের চাহিদা বাড়ছে। বাংলাদেশের নির্মাণ শিল্পখাতে ও এর পরিবেশ সুরক্ষায় এ্যাক্রেডিটেশন ব্যবস্থার ভূমিকা অত্যন্ত গুরুত্বপূর্ণ হয়ে উঠেছে।

অর্থনৈতিক সমৃদ্ধির সাথে তাল মিলিয়ে বাংলাদেশে ব্যাপকহারে অবকাঠামোগত উন্নয়ন হচ্ছে। যোগাযোগ অবকাঠামোর উন্নয়নে দেশব্যাপী বাস্তবায়িত হচ্ছে বেশ কয়েকটি গুরুত্বপূর্ণ মেগা প্রকল্প। এসব মেগা প্রকল্প বাস্তবায়নের পথ ধরে দেশের নির্মাণ শিল্পের বিকাশ ঘটছে। নির্মাণ সামগ্রী উৎপাদন ও রপ্তানির বিপুল সম্ভাবনা তৈরি হচ্ছে। এটি কাজে লাগাতে নির্মাণ শিল্পখাতে এ্যাক্রেডিটেশন ব্যবস্থার অভিযোজন অত্যন্ত জরুরি হয়ে পড়েছে।

সুসংগঠিত এ্যাক্রেডিটেশন ব্যবস্থা বাংলাদেশে একটি নতুন ধারণা। বাংলাদেশ এ্যাক্রেডিটেশন বোর্ড (বিএবি) নতুন হলেও অব্যাহত প্রচেষ্টা ও পেশাদারিত্বের কারণে এ সংগঠন অনেক দেশের তুলনায় অপেক্ষাকৃত অল্প সময়ে দ্রুত এ্যাক্রেডিটেশন ধারণা ছড়িয়ে দিতে সক্ষম হয়েছে। ফলে এ্যাক্রেডিটেশনের বিষয়ে বাংলাদেশের ভোক্তা-সাধারণের চাহিদা এবং সরকারি নিয়ন্ত্রক সংস্থার আস্থা আগের চেয়ে বৃদ্ধি পেয়েছে।

বিএবি ইতোমধ্যে পঞ্চাশের অধিক টেস্টিং, ক্যালিব্রেশন ও মেডিকেল ল্যাবরেটরিসহ ইন্সপেকশন ও সার্টিফিকেশন বডিকে এ্যাক্রেডিটেশন সনদ প্রদান করেছে। আশা করি, বোর্ডের কার্যক্রম সমাজের চাহিদা পূরণে সমর্থ হবে।

মোঃ আবু আবদুল্লাহ

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Xiao Jianhua



Merih Malmqvist Nilsson

World Accreditation Day 2017

Accreditation: Delivering confidence in construction and the built environment

World Accreditation Day 2017 focuses on how accreditation delivers confidence in construction and the built environment. Standards, conformity assessment and accreditation are well-established and accepted tools that are used to support the construction industry, building owners and operators from contractors to manufacturers, designers and architects, to structural and civil engineers. They are also used by policy makers, local authorities and regulators to support construction-based regulation, environmental protection, public safety, fraud prevention, public trust and innovation.

The building sector is important for economic development, employment creation and the environment. In less developed economies, existing commercial and domestic properties, as well as infrastructure projects such as roads, bridges and transport networks, tend to be highly vulnerable to climate and disaster risk. In more developed economies, construction is a complex and highly competitive sector, which provides challenges for companies seeking to improve margins, and reduce costs whilst improving build quality, ensuring a safe environment on site and delivering increasingly sustainable buildings. The digital revolution is also reaching the construction sector with Building Information Modelling for the design of structures, to the embedding of smart and connected technology in construction components.

Construction supply chains are being impacted by the pace of urbanisation, technological advances in manufacturing and construction techniques, environmental pressures, changes in design preferences, and evermore globalisation of supply chains.

Given these factors, it is critical that the public have confidence in the safety, security, and sustainability of construction projects and the built environment. Accreditation provides this confidence by providing a system that supports the management of risk, helps drive efficiency, and demonstrates compliance with national or local regulation. Accredited testing, calibration, inspection and certification provide suppliers, purchasers and specifiers with assurance that construction projects run efficiently, construction sites are safe and reliable materials are used. They also provide Government and Regulators with reliable evidence that completed projects meet regulatory compliance, and existing buildings continue to be safe to use.

Accreditation covers many disciplines throughout the building supply chain. Laboratories are accredited to test construction products and raw materials, geotextiles, engineering materials, machinery and structures, acoustics, and air leakage testing. Calibration laboratories specialise in acoustics, dimensional, mass, density, volume, force, torque, hardness, electrical, pressure, flow, temperature and humidity calibration.



Accredited certification of Quality, Environmental, Occupational Health & Safety, and Energy Management Systems ensure that construction companies have the appropriate controls and processes in place to deliver projects efficiently, control their environmental impact and energy efficiency, and deliver a safe working environment.

Inspection bodies carry out construction-related activities such as welding and welding procedures, pressure vessels, piping, and gas, electrical safety, lifting equipment and the carriage of dangerous goods. Accreditation also covers inspection services in areas such as asbestos surveying and legionella risk assessments.

A brochure giving more details of how accreditation delivers confidence in construction and the built environment is available for download from the IAF and ILAC websites.

Major events, press and television coverage, workshops and seminars will take place in conjunction with the celebration of **World Accreditation Day** in over 100 countries to raise awareness of the value that accreditation plays in the construction sector. For further details, contact your local accreditation body.

Further case studies, research and support material is available at www.publicsectorassurance.org

Accreditation: Delivering confidence in construction and the built environment

June 9, 2017 marks World Accreditation Day as a global initiative, jointly established by the International Accreditation Forum (IAF) and the International Laboratory Accreditation Cooperation (ILAC), to raise awareness of the importance of accreditation. This year's theme focuses on how accreditation can support professionals in the construction industry, ranging from contractors, manufacturers, designers, architects, civil engineers, to regulators.

Standards and accredited conformity assessment are market-based tools that can be used in the construction sector to cover construction products and materials, building techniques and practices, onsite Health & Safety, environmental impact, to even the use of digital technology in smart buildings.

The construction sector is complex and highly competitive, and provides challenges for companies seeking to improve margins, and reduce costs whilst improving build quality and ensuring a safe environment on site. Accreditation supports the construction sector to control risk, help drive efficiency, demonstrate regulatory compliance, and provide supply chain confidence.



What are the issues?

- Are the buildings we live or work in safe?
- Are there measures in place to ensure that construction sites are safe places to work?
- What reassurance is there that raw materials and construction products meet specification and are of suitable quality?
- How do we know that buildings are capable of withstanding fire, storm, water, collapse, subsidence, vibration?
- How can we trust claims made about the environmental impact and sustainability of construction projects?

The building sector is important for economic development, employment creation and the environment. The volume of construction output is forecast to grow by 85% to \$15.5 trillion worldwide by 2030¹. This growth will be driven by developed countries recovering from economic instability and emerging countries continuing to industrialize. With a growing world population, and around half of that population living in urban areas, the need for commercial and domestic construction and infrastructure increases. At the same time, there are diminishing natural resources, pressures on public and private finances pressures, and requirements placed on the environmental impact and long-term sustainability of construction projects.

Accreditation can support the sector to meet its need for smarter, cleaner and safer construction by providing assurance into the safety of the workforce on-site, the quality and origin of construction products and raw materials, the energy efficiency of buildings, the quality of design and architecture, the safe installation of electrical and gas networks, and the long-term sustainability of buildings.

¹PwC Global Construction 2030

Construction tenders in Northern Ireland require Environmental Management System Certification

In Northern Ireland, all construction works contracts procured by a Centre of Procurement Expertise (CoPE) include a requirement that all main contractors seeking to tender shall have and maintain an Environmental Management System (EMS) certified by an accredited third party. The department has taken this step to minimise the impact that construction has on the environment and to ensure that contractors comply with applicable laws and regulations.

Central Procurement Directorate (CPD) in conjunction with the CoPEs will approve and accept third party certification of an EMS provided that:

- it is based on a recognised standard – for example, ISO 14001, and
- it is construction focused incorporating site inspections and
- the third party certification body is accredited



What is the role of accreditation?

Accreditation determines the technical competence, integrity and impartiality of organisations providing conformity assessment services such as testing, calibration, certification, and inspection based on international standards.

Accreditation is an impartial and objective process that provides the least duplicative, the most transparent and the most widely accepted route for the provision of credible and trustworthy conformity assessment results.

Accreditation bodies are established in most countries to ensure that conformity assessment bodies are subject to oversight by a competent body. Internationally recognised accreditation bodies, which have been evaluated by peers as competent, sign international arrangements that enhance the acceptance of products and services across borders, thereby creating a global infrastructure to support trade regulatory approval processes, and confidence in the marketplace.

These arrangements are managed by IAF, in the fields covering accreditation of certification bodies and verification/validation bodies, and ILAC, in the areas of laboratory and inspection body accreditation.

This system helps to make work carried out by accreditation bodies consistent across the globe, and maintains international standards from one accreditation body to others. As a result, products and services tested, inspected or certified once under the IAF and ILAC umbrella can be accepted everywhere with equal confidence.

Swedish Authorities rely on accredited personnel certification to support the quality of the built environment

The Swedish authority Boverket – the Swedish National Board of Housing, Building and Planning uses accredited certification bodies accredited to ISO/IEC 17024 to certify persons to ensure that they are competent according to:

- Expert in Energy consumption in buildings according to regulation BFS 2011:9
- Expert in Quality assurance during construction of buildings according to regulation BFS 2011:14
- Expert in Ventilation system in buildings according to regulation BFS 2011:16
- Expert in Fire protection in buildings according to regulation BFS 2011:17
- Expert on Culture values for buildings according to regulation BFS 2011:16
- Expert in Accessibility in buildings according to regulation BFS 2011:18



What benefit does accreditation provide?

For Building owners and Facilities Managers

Owners of commercial properties or Facilities Managers are responsible for provide a safe and efficient environment which supports businesses and other types of organisations. Facilities managers use the services of external contractors to provide testing, inspection and certification services to monitor the safety of the built environment.

Accreditation ensures that they can make an informed choice and have confidence in their selection of suppliers.

This can include the testing of asbestos samples, legionella bacteria, noise acoustics, sound-proofing, and ambient air quality. It also covers the certification of renewable energy installers, the installation of alarm and security systems, fire safety inspections, asbestos surveys, legionella risk assessments, and pressure vessel lift inspections.

Ensuring the safety of pressure vessels in South Africa

The Minister of the Department of Labour (DoL) recognises the use of Risk Based Inspection (RBI) implemented by those responsible for pressure vessels and steam generator in industries. These regulations are enacted through an accreditation programme that recognises that certification bodies will certify risk based inspection management systems. Industry benefits through reduced downtime of equipment, and potentially lower insurance premiums.

For consumers

- Confidence in the safety of new and existing buildings and the general infrastructure.
- Confidence in the claims made about sustainability, environmental and energy performance of commercial and domestic buildings.

Testing the quality of construction products and materials in the UK

Testing laboratories operate in the fields of construction materials (such as concrete, aggregates, cement, soils, bituminous materials, roofing materials, rock and natural stone, masonry, steel), manufactured construction products (such as Road Signs & Lighting Columns, Floors, Non Electrical Cutlery and Domestic Kitchen Tools, Windows, Glazing and Doors, Pipes, Ducts and Fittings, Plumbing Components, Valves, Fittings and Water Meters, Vehicle Light Fittings, Bulbs and reflectors, paints and coatings, Road Signs & Lighting Columns, ceramics, tools, and artificial sports and playground surfaces), geotextiles, NDT, engineering materials, machinery and structures, acoustics, and air leakage testing to deliver supply chain confidence.

Calibration laboratories specialise in acoustics, dimensional, mass, density, volume, force, torque hardness, electrical, pressure, fluids, temperature and humidity testing.

Further information

Visit www.publicsectorassurance.org/topic-areas/construction to access more examples of how accreditation is used in the construction sector by central government, local authorities and regulators to deliver positive benefit.



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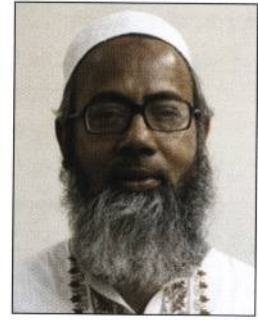
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Accreditation: Delivering Confidence in construction and the built Environment

Professor Dr. Md. Shafiul Bari



1. INTRODUCTION:

Accreditation is the process in which certification of competency, authority or credibility is presented. Organizations that certify third parties against official standards are themselves formally accredited by accreditation bodies (such as BAB, UKAS); hence they are sometimes known as accredited certification bodies. The accreditation process ensures that their certification practices are acceptable, typically meaning that they are competent to test and certify third parties, behave ethically and employ suitable quality assurance.

Accreditation can support professionals in the construction industry, ranging from contractors, manufacturers, designers, architects, civil engineers, to regulators. Standards and accredited conformity assessment are market-based tools that can be used in the construction sector to cover construction products and materials, building techniques and practices, onsite Health & Safety, environmental impact, to even the use of digital technology in smart buildings. Accreditation supports the construction sector to control risk, help drive efficiency, demonstrate regulatory compliance, and provide supply chain confidence

The aim of this paper is to deliver confidence in building construction and discuss the main contributing factors which lead to poor performance during the earthquake and to make recommendations which should be taken into account in designing and construction of the multi storied reinforced concrete buildings so as to achieve their adequate safe behavior.

2. CAUSES OF COLLAPSE OF RC FRAME BUILDINGS & RECOMMENDATIONS

2.1 Ignorance of the Architects and Structural Engineers about the Contents of the recent Building Codes :

Recommendation:-

Architect's and Structural engineer's design office should fully familiarize with the contents of following these codes:-

- * Bangladesh National Building Code -2006
- * American Concrete Institute "Building code requirements for structural concrete and commentary" ACI 318-08/ACI 318R-08
- * ASCE (2005) "Minimum design loads for buildings and other structures" ASCE 7-05,
- * Handbook On Concrete Reinforcement And Detailing - SP:34 (S&T) -1987
- * Manual Of Engineering & Placing Drawings For Reinforced Concrete Structures- (ACI 315-80)

2.2 Softness of Base Soil:

The soft soil on which most buildings are founded would have affected the response of the buildings in many ways:

- * Amplification of the ground motion at the base of the building;
- * Relative displacement between the individual column foundations vertically and laterally, in the absence of either the foundation struts or the plinth beams;
- * If the soil is sandy and water table is high, it may liquefy. The adverse effects of liquefaction may be seen in Figs. 1, 2 & 3.



Fig. 1
The Building Sank evenly about 1 m due to soil liquefaction. The displaced soil caused a bulge in the road.



Fig. 2
This inclined building sank unevenly and leans against a neighboring building.



Fig. 3
The solid building tilted as a rigid body and the raft foundation rises above the ground



Recommendation:-

Soil exploration at the buildings site must be carried out at sufficient points and to sufficient depth so as to give:-

- * Soil classification in various layers and the properties including level of water table just before and just after monsoon along with SPT values and CPT values.
- * The output results should include liquefaction potential, safe bearing capacity and the type of foundation to be adopted (Shallow or Deep).

2.3 Soft-first Storey:

Open ground storey ('Soft' storey) used in most severely damaged R.C. buildings, introduced 'severe irregularity of sudden change of stiffness' between the ground storey and upper storeys. 'Soft' storey is severely strained causing its total collapse, much smaller damages occurs in the upper storeys, if at all. Behavior of soft first storey buildings (buildings on stilts or with open plinth) during earthquakes may be seen in Figs. 4, 5 & 6.



Fig. 4
Sway mechanisms with soft storey ground floors (Izmit, Turkey 1999)



Fig. 5
Soft first storey collapsed, upper part of the building fall onto the ground, (kachchh, 2001)



Fig. 6
Soft Storey (Open Plinth), Vertical Split between two blocks (Bhuj)

Recommendation:-

To safeguard the soft first storey from damage and collapse, two alternative design approaches are followed:

- (i) The dynamic analysis of the building considering stiffness of infill walls is to be carried out.
- (ii) Bare frame building (Neglecting the effect of infill wall) is analyzed and designed for 2.5 times the storey shears and moments: OR 1.5 times if shear walls are introduced in both directions of the building.

Some remedial measures to counter the bad performance are shown in Fig. 7.

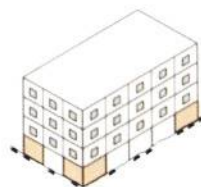
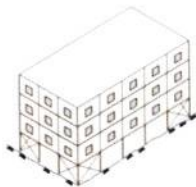


Fig 7: Remedial measures of Soft storey

Sometimes a soft storey is created some where at mid-height of the multi-storey building, for such a case also, the storey columns should be designed for the higher forces OR a few shear walls introduced to make up for the reduced stiffness of the storey



Fig.8:-
Collapse of soft middle storey in a building at Bhuj

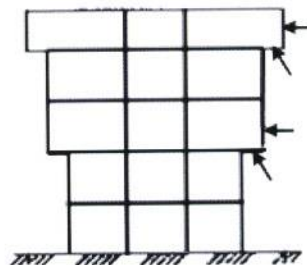


Fig.9:-Floating columns
Fc= Floating Columns
Cb= Cantilever Beams



Fig.10
5 storey R.C., collapse of open plinth, water tank at top dislocated)



2.4 Bad Structural System:

The structural system adopted using floating columns (see Fig 9) is very undesirable in earthquake zones since it will induce large vertical earthquake forces.

Recommendation:-

The structural engineer should provide for the load path in the building from roof to the foundation. Other irregularities may cause for large torsional moments and stress concentration in the buildings which should better be avoided.

2.5 Improper Dimensioning of Beams & Columns:

The structural dimensioning of beams and columns are sometimes inadequate in terms of provisions of codes.

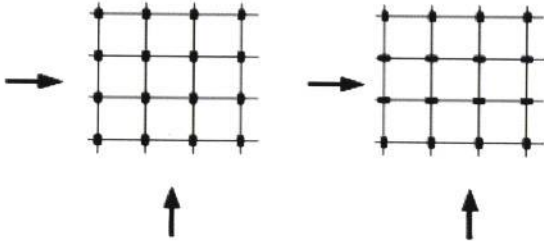


Fig.11:- Lateral Strength of Building Frame

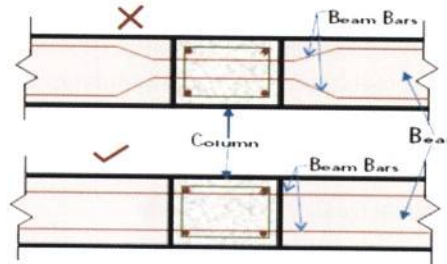


Fig.12:- Plan of Reinforcement in Beams & Columns

Recommendation:

The relative dimensions of beams & columns become should be such that reinforcement passing through and anchored in the beam-column joints, permitting enough space for proper concreting.

2.6 Poor Construction Quality:

The construction quality of the damaged R.C. buildings is found to be much below that desired, as seen by the lower clear cover to reinforcement than code provision etc.

Recommendation:

Good quality of construction will include: proper mixing and quantity of water, good quality sand and aggregates, designed quantity of cement in the mix, proper mixing of all the ingredients with control on water cement ratio, adequate compaction in the placement of concrete preferably by using vibrators, proper placement of steel with control on the cover to steel and adequate curing before striking of the form work. There should have appropriate sampling and testing of materials carried out in a recognized laboratory.

2.7 Collapse of Rana Plaza

There were many different factors that led up to the collapse of the Rana Plaza on April 24, 2013, making it difficult to pinpoint one issue as the deciding fault. The building itself had structural integrity issues due to the weak soil foundation beneath, the use of poor quality materials during construction, increased loads due to additional floors and a change in occupancy type from the design, and four rooftop generators that shook the building during operation. These physical issues combined with a inspection and regulation system that failed to check the building, notice the apparent issues, and cease construction or operation due to the unsafe nature of the building, created a very dangerous situation that sadly resulted in the collapse of the Plaza and the deaths and injuries to thousands of workers. Many building owners in Bangladesh, used his power, money, and political connections to cheat the system, acquire illegal permits, and ignore professional opinion, leading to immoral decisions that put thousands in harm's way.



Fig: 13: Rana Plaza shortly after collapse.



3. QUALITY CONTROL OF CONSTRUCTION:

For construction projects, quality control means making sure things are done according to the plans, specifications, and permit requirements. One of the best ways to assure good construction projects is to use an inspector. The first step an inspector should take is to become familiar with the plans, specification, and permit requirements and, equally important, to have some common sense.

3.1 Quality Control

Monitoring specific project result to determine if they comply with relevant quality standards and identifying ways to eliminate cause of unsatisfied performance Contract documents comprise a clear, complete, and accurate description of the facility to be constructed, correctly conveying the intent of the owner regarding the characteristics of the facility needed to serve his or her purposes. The contract documents define a constructed facility considered acceptable under the applicable regulatory codes and standards of professional practice, in terms of its reliability, the ease with which maintenance and repairs can be performed, the durability of its materials and operating systems, and the life safety provided to its users.

3.2 International Quality Control Body

ISO 9001 (QUALITY MANAGEMENT) & ISO 14001 (ENVIRONMENTAL MANAGEMENT)

ISO 9001 looks for Quality (means product feature which are required by the customer). & Quality management (ensure that products or services satisfy the customer's quality requirements and comply with any regulations applicable to those products or services.). On the other hand ISO 14001 looks for **Minimize harmful effects** on the environment by conforming to applicable **regulatory requirements**, and to achieve continual improvement of its **environmental performance**.

4. REMEDIES AGAINST BUILDING COLLAPSE AND SAFE CONSTRUCTION

- * First and foremost remedy will be to curb illegal constructions.
- * The municipal/City corporations should also carry out a survey of the health of the various buildings to ensure the safety of its residents. Strict action should be implemented against those who subvert the law and build illegal buildings or add extra floors than permissible according to local building codes.
- * At a technical level, no construction should ever be started without a proper structural design by a structural engineer.
- * The builders must employ quality materials and good workmanship in the execution of a structure. Soil tests must be compulsorily conducted before the construction of any building. Strict supervision as well as third party assessment must be implemented to assess the quality of work at a construction site.
- * The structural designs prepared by the engineer appointed by a builder must be cross-checked by another structural engineer appointed by the municipal corporation. The municipal corporation may hire external structural consultants for the purpose. This will prevent faulty structural designs that may result in building failure.
- * The site execution of construction work, especially with respect to RCC work must be supervised by an external licensed supervising engineer appointed by Municipal Corporation.
- * Soil investigation report of the site must be made mandatory and must be conducted by a reputed institute or a laboratory. This will reduce the risk of building collapse by foundation failure.
- * The final copies of design and drawings must be given to the owners of the building for safe keeping which will become useful when any structural repairs are to be done in future.
- * Any structural repairs work or addition of new floors must be done only after consulting structural engineers.
- * For buildings which are old and which are showing signs of deterioration, immediate health check must be carried out and proper repairs must be implemented after consulting a structural engineer.
- * These measures, if properly implemented by both the local authorities and the builders, will prevent incidents of building collapses and will effectively save hundreds of lives.

Keynote Presenter is a Professor Dept. of Civil Engineering, BUET, Dhaka-1000, Bangladesh



আস্থা

শ্যামল দত্ত



ভোরবেলায় ড্রয়িং রুমের ল্যান্ড ফোনের বিকট আওয়াজে ঘুম ভেঙে গেল নাজিমের। আজকাল ল্যান্ড ফোনে কেউ ফোন করে না। তাই ফোনের আওয়াজটা প্রথমে ঠিক বোঝা যায়নি। কিন্তু একটানা যখন বেজেই চলেছে, তখন মনে হলো আওয়াজটা ড্রয়িং রুমের। আর তখনই ল্যান্ড ফোনের কথা মনে পড়লো। চোখ কচলাতে-কচলাতে বিছানা ছেড়ে উঠে এলেন নাজিম। অনেক রাতে শুয়েছেন, ভালো ঘুমও হয়নি। মাথাটা কিম কিম করছে। কী আশ্চর্য ফোনের আওয়াজে বাসার আর কারও ঘুম ভাঙেনি। শেষপর্যন্ত নাজিমকে এসে ফোন ধরতে হলো, হ্যালো।

স্যার, বিরাট দুর্ঘটনা।

ওপাশ থেকে কাঁপা-কাঁপা গলায় ম্যানেজার হারুনের কণ্ঠ, স্যার গতকাল বিগ ব্রাদার গ্রুপের নির্মাণাধীন পঁচিশ তলা কারখানার ভবনটা ভেঙে পড়েছে।

হারুনের কথায় বিরক্ত হলেন নাজিম। কারণ গতকাল সন্ধ্যার পর থেকে সবগুলো টিভি চ্যানেল এটা লাইভ দেখাচ্ছে। তবু সাত সকালে ফোন করে ডেকে হারুনের এই খবর জানানোর প্রয়োজন কেন হলো, নাজিম বুঝতে পারলেন না। বললেন, হারুন দুর্ঘটনাটা বিগ ব্রাদার গ্রুপের, আমাদের না।

স্যার, যে বিল্ডিংটা ভেঙে পড়েছে সেখানে আমাদের কোম্পানির সাপ্লাই করা রড-সিমেন্ট পাওয়া গেছে। নির্মাণে আপনার বাড়িঅলা শওকত সাহেবের ইটভাটার ইটও আছে। তাই দুর্ঘটনাটা এখন আমাদেরও।

এসব কী বলছো হারুন?

ঠিকই বলছি স্যার। পুলিশ তদন্ত শুরু করেছে। এখন আমাদেরও বাঁচার উপায় নেই। সেল ফোন ট্র্যাক করে পুলিশ যে কোনো সময় আমাদের ঠিকানায় পৌঁছে যেতে পারে। তাই আমি আমার সেল ফোন বন্ধ করে দিয়েছি, আপনিও বন্ধ করুন স্যার।

হারুন, হারুন, হারুন...

কী হয়েছে বাবা?

ঘুম ভেঙে গেল নাজিমের। সামনে মেয়ে শানুকে দেখে বিছানায় উঠে বসলেন, আমার সেল ফোনটা কোথায়, অফ

করতে হবে।

সেল ফোন অফ করবে কেন বাবা?

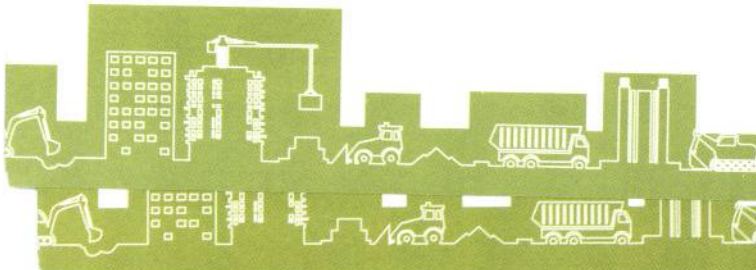
হারুন যে ফোন করে বললো—

কী বলছো বাবা, হারুন আফেল আবার কখন ফোন করলো তোমায়। তুমি তো ঘুমিয়ে ছিলে।

অ্যাঁ, ঘুমিয়ে ছিলাম!

ব্যাপারটা যে নিছক স্বপ্ন, এতোক্ষণে বুঝতে পারলেন নাজিম। গত রাতে ভালো ঘুম পর্যন্ত হয়নি। এখনকার এই ব্যাপারটা স্বপ্ন হলেও দুর্ঘটনাটা কিন্তু স্বপ্ন নয়। গতকাল সন্ধ্যার পর থেকে নাজিম একটি মুহূর্তের জন্য টেলিভিশনের পর্দা থেকে চোখ সরাননি। মাঝে মাঝে অবশ্য রিমোট চেপে টেলিভিশন চ্যানেল পরিবর্তন করেছেন। কিন্তু সব চ্যানেলে একই ঘটনার সরাসরি সম্প্রচার, সেই সাথে টপ নিউজঃ ‘স্মরণকালের ভয়াবহ ভবন ধস’। ঘটনাটা ঘটেছে রাজধানীর অদূরে শহরতলীতে। সেখানে বিশাল এলাকা জুড়ে বিগ ব্রাদার গ্রুপের পঁচিশ তলা শিল্প কারখানা নির্মিত হচ্ছিল। দুপুরের পর ভবনটি ধসে পড়েছে। এখন পর্যন্ত অবশ্য হতাহতের কোনো খবর পাওয়া যায়নি। আইনশৃঙ্খলা রক্ষাকারী বাহিনী বিধ্বস্ত এলাকাটি ঘিরে রেখেছে আর ফায়ার ব্রিগেড অ্যান্ড সিভিল ডিফেন্স সার্ভিস সদস্যরা সেখানে উদ্ধার অভিযান শুরু করেছে। দুর্ঘটনাটা এমন একটা সময়ে ঘটেছে যখন নির্মাণকাজ বন্ধ ছিল। তাই আশা করা হচ্ছে, প্রাণহানির কোনো ঘটনা ঘটেনি। কিন্তু ক্ষয়ক্ষতির পরিমাণ বিরাট। টেলিভিশন রিপোর্টাররা অবশ্য এরই মধ্যে নির্মাণকাজ বন্ধ থাকার ঘটনা জানতে পেরেছে। তারা বলছে, যে ঠিকাদারি প্রতিষ্ঠানকে ভবন নির্মাণের দায়িত্ব দেওয়া হয়েছিল, কর্তৃপক্ষের সাথে তাদের ঠিক বনিবনা না হওয়ায় মাঝপথে ঠিকাদার প্রতিষ্ঠান নির্মাণকাজ বন্ধ করে দেয়। পুলিশ কিন্তু ইতোমধ্যে ঠিকাদার প্রতিষ্ঠান আর ভবন মালিকের খোঁজ-খবর শুরু করেছে। কিন্তু শীর্ষ পর্যায়ের সবাই এখনও ধরাছোঁয়ার বাইরে।

অন্য দিন হলে হয়তো টেলিভিশনের এই সরাসরি সম্প্রচারটা নাজিমের দেখাই হতো না। কিন্তু আজ ছুটির দিন। বাইরেও



Accreditation in Construction Industry

Engr. M. Liaquat Ali



For sustainable development Bangladesh has undertaken several initiatives under various projects and intends to implement these through public and private sector investments. The government is keen to play a key role to make a sustainable economy of the country. In the meantime a number of steps has been taken to establish a competitive edge in terms of availability of skilled manpower and high quality infrastructure for attracting investments in modern construction, manufacturing and services sectors. The government considers that construction, manufacturing and service sectors will have a major growth opportunity in the future and is keen to significantly increase the levels of income and employment, by promoting local construction, manufacturing industry and service sectors to grow to a mid/large size companies besides attracting foreign investment in this country.

These construction and manufacturing sectors can potentially create about 10 million jobs directly with a four times multiplier effect in the indirect jobs by 2021 resulting in a significant contribution to the GDP of the country. The government has already established organizations like the Bangladesh Economic Zone Authority with a mandate to develop several Economic Zones in the country. These zones are expected to be a landmark with state of art facilities. The government has also envisioned construction and development of manufacturing industries with infrastructural and utility facilities. Public Investment Facility (PIF) will finance off-site, last-mile infrastructure to facilitate the licensing and development of private-sector led economic zones throughout the country.

Sustainable Development Objective of the government is to facilitate investment in growth centers in the emerging construction, manufacturing and services sectors of the country to generating employment. To this end the following are the key players of development:

- * Capacity building of public institutions (including BEZA, BEPZA, HTPA, BSCIC, RHD, Bangladesh Bridges Authority, Bangladesh Railway, PWD, LGED, BREB, PDB, WDB, WASA, City Corporations, Municipalities, Ports, City Development Authorities, Hospitals, Facilities Department , Telecommunications, etc) having involvement in the development of national infrastructure;
- * REHAB is also an important key player in construction industry in the private sector.

In pursuit of the business linkages objective, public institutions are extending support to local construction, manufacturing companies and service providers to enhance the competitiveness by creating quality testing facilities, certified management and product manufacturing and service companies to grow their business to become mid/large size firms and encourages them to establish operations at the developing zones.

In this circumstance, Bangladesh Accreditation Board (BAB) has an opportunity to provide requisite supports in achieving quality inspection, testing, and certification programs to keep the growth sustainable. BAB is mandated by bylaw to establish an internationally recognized accreditation infrastructure for inspection, testing and certifications to deliver confidence in construction and services.



Some of the widely used construction and building materials are: Steel bars(rods), cement, electric cables, electric wires, welding rods, glass sheets, aluminum sections, paints, bricks, lifts, cranes, steel sections, welding rods, steel sheets, steel plates, steel ropes, bricks, pumps, pipes, tiles, fire extinguishers, helmets, fire alarms, transformers, generators, boilers, regulators, chillers, air coolers, electric fans, ventilators, solar panels, lamps, electrical accessories, transformers, switch gears, ovens, water heaters, sanitary wares, sanitary fittings, ETP, WTP, way bridges, trucks, covered vans, pickups, storage tanks, mobile towers, IPS, UPS, stabilizer, cargo etc .

Achieving sustainable development in the construction sectors expected outcome(s) and impact of the following activities needs to be properly addressed.

1. *Awareness, training programme, symposium and workshops on quality and safety.*
2. *Inspection and testing services by accredited inspection, testing and calibration laboratories*
3. *Support Service to product, certification and management Certification on OHSAS, EMS (ISO 14001), EnMS (ISO 50001) and QMS (ISO 9001)*

4. *Accredited EMS, QMS, EnMS, OHSAS and product certification bodies*

Outcome: Contributions in the availability of sustainable and safe buildings, constructions, manufactured products and services in the country.

Impact: Well being of the people through quality operations and service aiming at ensuring quality and safety at all levels of construction and building industries.

The initiatives adopted in this regards can be translated in to reality by implementing the programs in line with international standards through accreditation. Accreditation is a must for delivering confidence in construction and builds environment -a prerequisite to sustainable development of the nation.

Former DG, BAB

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Accreditation in our daily life and for environmental sustainability: ensuring water quality

Dr. Md. Safiur Rahman



Water is one of the most important substances on earth. All plants and animals must have water to survive. If there was no water there would be no life on earth. Human body is composed of above 60% of water and main composition (> 90%) of human blood is water. Everyday an adult person has to drink around 2 liter of pure water to maintain body function properly. The water we consume through food and drinks follows a very precise route to arrive in our cells, which is a vital constituent. The main purposes of water in our body are to function the cells properly, to maintain chemical and metabolic reactions, to transport of nutrients and to removal of waste from our body. Apart from drinking it to survive, people have many other uses for water. These include: cooking, washing their bodies, washing clothes, washing cooking and eating utensils, keeping houses and communities clean.

Subsequently, around 50 to 100 gallon of pure water is needed for a person in our daily life. Pure water must be free from any type contamination either chemicals or microorganisms. But unfortunately, chemical and disease-causing microorganisms can find their way into water supplies. When this happens, water becomes polluted or contaminated and when people drink it or come in contact with it in other ways they can become very sick. Different types of inorganic, organic and microbial contaminations are present in water. Arsenic poisoning has been found to be a recent severe problem in Bangladesh. A recent study published in the Bulletin of the World Health Organization (WHO) suggests that Bangladesh is grappling with the largest mass poisoning in history,

potentially affecting between 35 and 77 million of the country's 165 million population, threatening them with potential epidemics of cancers and other fatal diseases.



Nevertheless, different types of water contaminations are transferring into soil, then plants/vegetables and ultimately all toxins enter into human body. However, people are specially affected by different types of health related problems due to water contaminations. Several heavy metals (i.e., As, Pb, Cd, Cr, Ni, Cu, Hg) and several organic contaminants (i.e., PAHs, DDT, DBPs) are directly and indirectly linked with different types of cancer in human body due to long time exposure through water. Reversely, a significant number of waterborne deaths are also happening by the different types of microorganisms, which are present in water. According to the recent WHO's report, every year 3.4 million people, mostly children, die annually only from water-related diseases and 80% of diseases in developing countries are due to water supply contamination.



Therefore, sufficient good quality water is essential and important for our daily life and environmental sustainability, as well 60% death can be prevented by proper water management. Chemical water analysis is carried out to identify and quantify the chemical components and properties of water samples using different calibrated instruments. For instance, atomic absorption spectrophotometer (AAS), inductive couple plasma mass spectrometry (ICP-MS) and total reflection X-ray fluorescence (TXRF) are using for heavy metals analysis, whereas gas chromatography and High-performance liquid chromatography (HPLC) are using for the determination of organic contaminants in water. Reversely microscopes use to identify and to quantify the microorganisms in water. For ensuring the competence of getting the actual concentration of any toxin/s present in water, all instruments must be calibrated by national metrology or accredited laboratory to ISO/IEC 17025 maintaining traceability to SI units.

Laboratory accreditation assesses factors relevant to a laboratory's ability to produce precise, accurate tests and data including the technical competence of staff, the validity and appropriateness of test methods, the suitability and maintenance of test equipment, the testing environment, sampling, handling and transportation of test items, and the quality assurance of test data. The laboratories should be obtained the following criteria for ensuring to monitor public water systems (PWS) compliance with health-based and aesthetic standards.

- * Laboratories must be certified by an international or a national body to analyze drinking water samples for compliance monitoring
- * Laboratories must successfully analyze proficiency testing (PT) samples at least annually for each method and analyte for which they desire certification
- * Laboratories must use approved methods
- * Laboratories must pass periodic on-site audits.



However, it has been suggested that an accredited chemical laboratory can ensure water quality in our daily life and for environmental sustainability by testing routinely all the water quality parameters. Recently (2015, March 05) our analytical chemistry laboratory, Atomic Energy Centre Dhaka has been received accreditation for 9 test in the field of chemical testing (ISO/IEC 17025).

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The necessity of ISO Certification in construction Industry

Md. Nasirul Islam



In many countries, the Construction Industry is a significant sector, and keeps largest employment. It also provides services and products for global export related to construction of buildings and infrastructure. ISO standards make available sector with clarifications for all aspects of activity, from the old-fashioned to the advanced, and they include tools to throw new challenges like quality control, pollution, energy management, etc with the challenges of sustainable development.

Implementing ISO standards in construction not only affords technical advantages, but also functional performance of social, economic and environmental improvements for industry, regulators and consumers. If we focuses on Construction meansthe process, art, or manner of building something. In other words it may be clearing, dredging, excavating, and grading of land and other activity associated with buildings, structures, or other types of real property such as bridges, dams, roads.

Types of Construction:

The nine types of construction are:

- **Types IA and IB:** Considered noncombustible and fire-resistive, direct descendent of Uniform Building Code's (UBC).
- **Types IIA and IIB:** Noncombustible, but have little to no fire-resistance.
- **Types IIIA and IIIB:** Combustible permits the use of wood framing, IIIA for 1 hour fire resistive.
- **Type IV: Unique type, heavy timber construction.**
- **Types VA and VB:** Slightly less fire-resistive, 1-hour for Type VA and no fire resistance for Type VB.

Construction is a high-risk activity, which must be managed from procurement, through the design process and to the end of the constructionstage. Everyone involved in a building project must appreciate their role,

from client, project supervisor design process (PSDP), projectsupervisor construction stage (PSCS), employees, contractors, manufacturers, designers, architects, civil engineers, to regulators.

The benefits of an effective management system to Construction Industries include:

All ISO standards are voluntary in nature and are driven by market demanding force. But sometimes it is more than regulatory lies in efficient use of resources and improved financial performance, improved risk management and protection of people and the environment, and increased capability to deliver consistent and improved services and products. Thereby increasing value to customers and all other stakeholders. The construction industry may be emphasis on the following ISO standards implementing that can be imposed manditory by Regulatory Bodies. Many of countries are doing in this ways. Some examples are- Hong Kong Housing Authority specifies the use of certified products and uses certified management systems forthe quality of building materials and components to an average of 20000 flats per year. In this way it is ensured that production process from incoming raw materials, production, inspection, sample selection and testing, traceability, etc thus making available certified construction products of quality for use in building projects.

Boverket, Swedish National Board of Housing, Building and Planning use Swedacaccredited certification bodies according to ISO/IEC 17024 to support the quality of the built environment.

In Dubai,Local regulators, the Public Health & Safety Department & Building Department require that lifting equipment including Italy's Ministry of the Environment uses accredited certification to manage competence of



installation and maintenance engineers. cranes and lifts shall be periodically inspected by the DAC accredited inspection/certification bodies.

Italy's Ministry of the Environment uses accredited certification to manage competence of installation and maintenance engineers. Accredited inspection supports government policy for the environmental sustainability of buildings

Environmental Management System (EMS)-ISO

14001:2015: Though Construction firms do not have comprehensive and certified EMS but intended to reinforce procedures for managing and reducing environmental impacts due to construction works. Construction Industry implements EMS to maintain compliance with environmental regulations, lower environmental costs, reduce risks, train employees, develop indicators of impact, and improve environmental performance.

Companies implementing EMS can be benefited by:

- Reduction in liability and risks
- Improved regulatory compliance requirements
- Open markets and reduced trade barriers
- Enhanced credibility among customers and peers
- Reduction of harmful impacts to the environment
- Prevention/reduction of pollution and waste, many times resulting in cost savings
- Improvements in site and project safety by minimizing injuries related to environmental spills, releases, and emissions
- Improved relationships with stakeholders such as government agencies, community groups, and investors; and Establishment of a system for continued environmental improvement.

Quality Management System (QMS)-ISO 9001:2015:

A quality management system is a way of defining how an organization can meet the requirements of its customers and other stakeholders affected by its work based on continual improvement. The general trend is that the most reputed agencies are introducing quality management systems in support of their activities. Government agencies are introducing pre-qualification or tender requirements that require quality assurance activity on construction projects. The specification for all project work to comply with a quality management standard is increasingly becoming a requirement.

This international standard focuses on: Assessing the overall context of your organization to define who is

affected by your work and what they expect from you. This will enable you to clearly state your objectives and identify new business opportunities. Putting your customers first, making sure you consistently meet their needs and enhance their satisfaction. This can lead to repeat custom, new clients and increased business for your organization. Work in a more efficient way as all your processes will be aligned and understood by everyone in the business or organization. This increases productivity and efficiency, bringing internal costs down. Implementing this standard organization can be benefited to meet the necessary statutory and regulatory requirements, to expand into new markets, as some sectors and clients require ISO 9001 before doing business and to identify and address the risks associated with your organization

OHSMS/OHSAS 18001:2007- (ISO 45001 planned for 2017)

OHSMS/OHSAS can be implemented in a construction company to comply safety issue. This Standard basically improves Leadership for top management, Risk Management for hazards and risks identified and the controls to prevent injuries and ill health, Commitment to Compliance for societal interests in laws and regulations promulgated, Worker Participation with health and safety and Performance Monitoring & continual improvement. The criteria for the OHSMS are designed to facilitate:

- Emerging structural plans and defining & coordinating the organization's processes and activities in accordance with health & safety management policies and standards
- Fortitude of occupational health & safety-related risks and their impact, prioritizing these risks, and taking preventive and corrective actions
- Conclusive on and acquiring the support goods and services like machines, materials, people and space, to conform to occupational health & safety requirements
- Continuously monitoring/ measuring and examining occupational health & safety performance
- Taking appropriate actions by adjusting and implementing plans, processes and activities to improve performance in health, safety, wellness and wellbeing of people.

Deputy Director, BAB



Sustainability and its importance for economic growth

Mohammed Abbas Alam



When we hear the word "sustainability" we tend to think of renewable fuel sources, reducing carbon emissions, protecting environments and a way of keeping the delicate ecosystems of our planet in balance. In short, sustainability looks to protect our natural environment, human and ecological health, while driving innovation and not compromising our way of life

Sustainability means everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment. The concept of sustainable development was introduced in early 1980's in order to reconcile conservation and development objectives. Since then, it has evoked much discussion.

The aim of sustainable development is to balance our economic, environmental and social needs, allowing prosperity for now and future generations. **Social sustainability** activities focus on maintaining mutually beneficial relationships with employees, customers and the community. These activities often have benefits in terms of positive profile and customer and community support. **Environmental sustainability** activities focus on the impact of resource usage, hazardous substances, waste and emissions on the physical environment. These activities may have a direct benefit for a business by reducing costs. **Economic sustainability** activities focus on business efficiency, productivity and profit.

Sustainable development consists of a long-term, integrated approach to developing and achieving a

healthy community by jointly addressing economic, environmental, and social issues, whilst avoiding the over consumption of key natural resources. Sustainable development encourages us to conserve and enhance our resource base, by gradually changing the ways in which we develop and use technologies. Countries must be allowed to meet their basic needs of employment, food, energy, water and sanitation. If this is to be done in a sustainable manner, then there is a definite need for a sustainable level of population. Economic growth should be supported and developing nations should be allowed a growth of equal quality to the developed nations.

The main objectives of sustainability is

- * The end of poverty and hunger
- * Better standards of education and healthcare - particularly as it pertains to water quality and better sanitation
- * To achieve gender equality
- * Sustainable economic growth while promoting jobs and stronger economies
- * All of the above and more while tackling the effects of climate change, pollution and other environmental factors that can harm and do harm people's health, livelihoods and lives.
- * Sustainability to include health of the land, air and sea

These include social progress and equality, environmental protection, conservation of natural resources and stable economic growth. Everybody has the right to a healthy, clean and safe



environment. This can be achieved by reducing pollution, poverty, poor housing and unemployment. Everybody has the right to a good standard of living, with better job opportunities. Economic prosperity is required if our country is to prosper and our businesses must therefore offer a high standard of products that consumers throughout the world want, at the prices they are prepared to pay. For this, we need a workforce equipped with suitable skills and education within a framework to support them.

Bangladesh is an emerging country in the global economy. Day by day we are improving our infrastructure such as education, training, skill development and advance technology are using to build the construction and ensuring the safety of people specially in the garments sector as per requirements sets by International Labor Organization (ILO).

For Sustainable development Bangladesh Government has undertaken several initiatives under various projects and intends to implement these through public and private sector investments such as Accord Alliance, Sustainable Development Goal

(SDG) etc. The government is keen to play a key role to make a sustainable economy of the country. In the meantime a number of steps has been taken to establish a competitive edge in terms of availability of skilled manpower and high quality infrastructure for attracting investors in modern construction, manufacturing and service sector will have a major growth opportunity in the future and is keen to significantly increase the levels of income and employment, by promoting local construction, manufacturing industry and service sector to grow to mid to large size companies besides attracting foreign investors investment in this country.

To achieve the SDG we have take the initiative to sustain all the projects taken in the public and private sectors. Initiative also needs to take to get the GSP privileges. Without Sustainability we can't assume continuous economic growth.

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WORLD METROLOGY DAY - 20 May 2017

Measurements for transport

May 20 is World Metrology Day, commemorating the anniversary of the signing of the Metre Convention in 1875. This treaty provides the basis for a coherent measurement system worldwide that underpins scientific discovery and innovation, industrial manufacturing and international trade, as well as the improvement of the quality of life and the protection of the global environment.

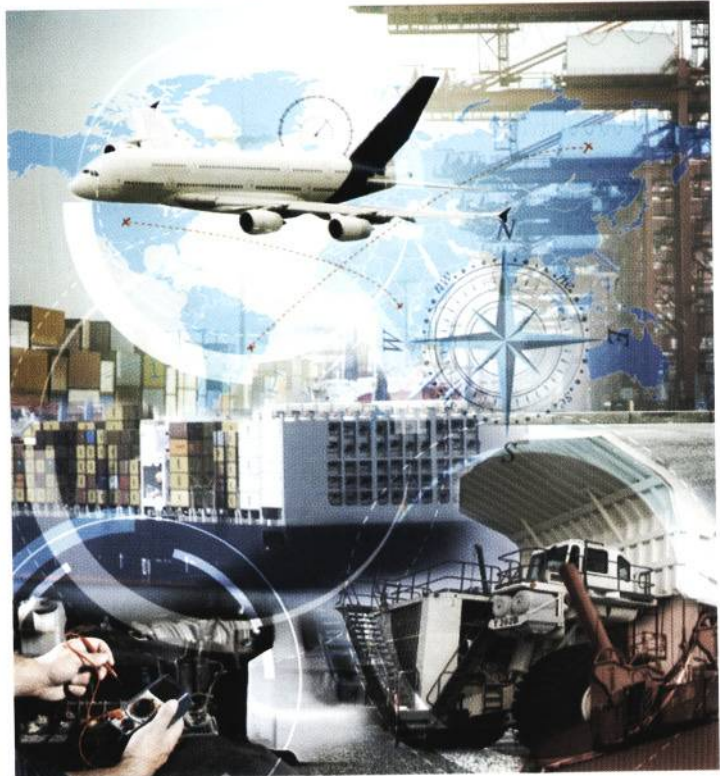
The theme for World Metrology Day 2017 is Measurements for transport. This theme was chosen because transport plays such a key role in the modern world. We not only move ourselves, but also the food we eat, the clothes we wear, the goods we use and rely on, not forgetting the raw materials they are made from. Doing so safely, efficiently and with minimal environmental impact requires an astonishing range of measurements.

Across the world, national metrology institutes continually advance measurement science by developing and validating new measurement techniques at whatever level of sophistication is needed. These advances are playing a crucial role in bringing new solutions to the transport sector, innovations such as hydrogen fuel cells, electric vehicles, or the new generation of fuel efficient passenger jets. The national metrology institutes participate in comparisons coordinated by the Bureau International des Poids et Mesures (BIPM) to ensure the reliability of measurement results worldwide. The BIPM also provides a forum for its Member States to address new measurement challenges. The International Organization of Legal Metrology (OIML) develops International Recommendations, the aim of which is to align and harmonize requirements worldwide in many fields, including transport.

World Metrology Day recognizes and celebrates the contribution of all the people that work in intergovernmental and national organizations throughout the year on behalf of all.

Further information, including a message from the Directors, posters, and a list of events, is available at www.worldmetrologyday.org

Metrology 2017 Measurements for transport



Bureau
International des
Poids et
Mesures

OIML

INM
Institut Nacional de Metrología
de Colombia

World Metrology Day
20 May
www.worldmetrologyday.org



External Quality Assessment in Medical Laboratory



Prof Brig Gen (Retd) Zahid Mahmud



Md. Akshad Ali

1.0 Introduction and Definition¹

The term external quality assessment (EQA) is used to describe a method that allows for comparison of a laboratory's testing to a source outside the laboratory. This comparison can be made to the performance of a peer group of laboratories or to the performance of a reference laboratory.

The term EQA is sometimes used interchangeably with proficiency testing; however, EQA can also be carried out using other processes.

EQA is an essential aspect of any laboratory operation. EQA provides a means of assessing the analytical performance of a laboratory compared to other laboratories utilizing the same methods and instruments.

Successful performance in an EQA program reflects the effectiveness of the laboratory's quality management, and allows for recognition of laboratory quality by external groups.

2.0 Characteristics of an EQA Scheme¹

EQA programs vary but principal characteristics include the following:

2.1. The EQA program can be organized at different levels: regional, national, or international.

2.2. Some EQA programs are obligatory, either required by an accrediting body or by law. Others are voluntary, and the quality manager may choose to voluntarily participate in an EQA program in order to achieve improvement in the quality of the laboratory's performance.

2.3. EQA programs can either be free-of-charge or require a fee. Free EQA programs include those offered by a manufacturer to ensure equipment is working correctly and those organized by a regional or national program for quality improvement.

2.4. Some EQA schemes may address a single disease, for example the EQA program for cardiac and diabetic. Others may address many kinds of laboratory tests, looking at the overall testing performance for clinical chemistry, hematology and immunology.

2.5. Individual laboratory results are kept confidential, and generally are only known by the participating laboratory and the EQA provider. A summary is generally provided and allows comparison to the overall group.

3.0 Types of EQA

Several EQA methods or processes are commonly used. These include:

- * Proficiency testing
- * Rechecking or retesting
- * On-site evaluation



3.1. Proficiency Testing (PT)¹: External provider sends unknown samples for testing to a set of laboratories, and the results of all laboratories are analyzed, compared, and reported to the laboratories.

PT has been in use by laboratories for many years. It is the most commonly employed type of EQA, as it is able to address many laboratory methods. PT is available for most of the commonly performed laboratory tests, and covers a range of chemistry, haematology, coagulation, microbiology and immunology testing. Most laboratory staff are familiar with the PT process, and many laboratories participate in some kind of PT.

In the PT process, laboratories receive samples from a PT provider. This provider may be an organization (non-profit or for-profit) formed specifically to provide PT. Other providers of PT include central reference laboratories, government health agencies and manufacturers of kits or instruments.

The laboratories participating in the program analyze the samples and return their results to the central organization using online software, email or by post. Results are evaluated and analyzed, and the laboratories are provided with information about their performance and how they compared with other participants. The participating laboratories use the information regarding their performance to make appropriate changes and improvements.

3.2 Other EQA methods¹

In situations where it is difficult to provide appropriate external samples, or sometimes, when normal laboratory quality control methods cannot be applied, other procedures have been developed and used for EQA. The primary examples, and their uses, are as follows.

3.2.1 Rechecking/Retesting: In this process slides that have been read are rechecked by a reference laboratory, samples that have been analyzed are retested, allowing for inter-laboratory comparison.

It has been used traditionally for EQA for microscopic slides for acid-fast bacilli (AFB), and for human immunodeficiency virus (HIV) rapid testing. It can also be used in other situations, but is not usually employed if traditional PT is feasible.

3.2.1.1 Retesting process: This EQA method is used for HIV rapid testing. HIV rapid testing presents some special challenges, because it is often performed outside a traditional laboratory, and by persons who are not trained in laboratory medicine.

Additionally, the kits are single-use, and cannot be subjected to the usual quality control methods that laboratories employ. Therefore, retesting of some of the samples using a different process such as Chemiluminescent immunoassay (CMIA) or enzyme-linked immunosorbent assay (ELISA) and western blot immunoassay helps to assess the quality of the original testing.

Characteristically, the retesting is firstly done by a reference laboratory to ensure quality, secondly, performed on dried blood spots or serum collected at the time of the rapid test performance and thirdly, not performed as a blinded process, as this is unnecessary.

The number of samples retested must provide statistically significant data in order to detect error. This becomes difficult in settings where small numbers of rapid tests are performed.

3.2.1.2 Rechecking Process: This method is most commonly used for acid-fast smears or histopathology/ cytology slides, Slides that were read in the original laboratory are "rechecked" in a central or reference laboratory. This allows for the accuracy of the original report to be evaluated, and also allows for the assessment of the quality of the slide preparation and staining.



The following principles are important when performing recheck procedures.

- i) The slides for re-examination must be collected randomly. Every effort should be made to avoid systematic sampling bias.
- ii) Rechecking must be based upon statistical considerations. A common method is for the central laboratory to recheck 10% of negative and 100% of positive slides.
- iii) When discrepancies occur, there should be procedures in place to resolve them.
- iv) The outcome of rechecking must be analyzed for effective and timely feedback

It is usually recommended that rechecking be done in a blinded fashion, so that the laboratorian performing the retest does not know the original results.

3.2.2. On-site Evaluation: A periodic visit by evaluators for on-site laboratory assessment is a type of EQA that has been used when other methods of EQA are not feasible or effective. Again, this method has most frequently been employed for assessment of sites performing AFB smears, histopathology/cytology slide and those performing HIV rapid testing.

On-site evaluation for the purpose of EQA may be conducted by a central reference laboratory or other health authorities. On-site evaluation can be used together with retesting and rechecking schemes to provide more information about performance.

4.0 Benefits of EQA ^{1,5}

Participation in an EQA program provides valuable data and information which are useful in -

- o Maintaining and improving the analytical quality of laboratory tests
- o Improving inter laboratory agreement and raising standards
- o Detecting equipment failures, identifying reagent problems, reviewing staff training
- o Initiating and evaluating corrective actions
- o Comparing different analytical methods

EQA participation will help to evaluate reliability of methods, materials, and equipment, and to evaluate and monitor training impact.

EQA helps to assure customers, such as physicians, patients, and health authorities, that the laboratory can produce reliable results.

Individual laboratories can use EQA to identify problems in laboratory practices, allowing for appropriate corrective action.

5.0 Participation in EQA

All laboratories should participate in EQA challenges, and this should include EQA for all testing procedures performed in the laboratory, if possible. The benefits of this participation are considerable, and EQA provides the only means available to a laboratory to ensure that its performance is comparable to that of other laboratories.

For laboratories that are accredited, or that plan to seek accreditation, EQA participation is essential. ISO 15189 addresses EQA requirements for laboratories as follows.³

* There is a requirement that the laboratory participate in interlaboratory comparisons.

* Where an established EQA scheme is not available, an alternate EQA mechanism will have to be considered for



interlaboratory comparison such as exchange of samples with other laboratories.

* The laboratory management shall monitor the results of EQA and participate in the implementation of corrective actions.

When participating in EQA programs, the laboratory needs to develop a procedure for the management of the process. The primary objective is to ensure that all EQA samples are treated in the same manner as other samples tested.

6.0 Reviewing the EQA Scheme Reports²

All reports are reviewed by the Quality Control Manager and are made available to departmental staff. Poor performance is actively investigated and formally documented. If necessary, the department works with the EQA scheme organizers to resolve problems. Problems are also communicated to analyser manufacturers and the suppliers of reagents and internal quality control material as appropriate.

7.0 The EQA Report and Acceptable Criteria for Performance

The report details the accuracy of a laboratory result by comparing it to a target value. This value is usually a consensus mean (e.g. the mean of all the results submitted by the various laboratories for a particular sample). Accuracy is often expressed as percentage bias. The bias may be transformed to give an Accuracy Index which can be compared to a performance rating scale to determine whether the bias, and therefore the accuracy is acceptable. Performance of participant laboratories may be evaluated by PT provider or EQA body using a combination of calculated scores, e.g.

i) Target Score, ii) Standard Deviation Index or Z- score and iii) Percentage Deviation.(% bias)

Criteria for acceptable performance is considered to be: 5,6

i) Target Score greater than 50

ii) SDI less than $\pm 2SD$ from the mean for comparison or Z- score less than 2.

iii) Percentage deviation within the "acceptable limits" set.

8.0 Unsatisfactory Laboratory Performance⁴

The object of EQA is not to name and shame poorly performing laboratories, but to help them maintain high standards of analytical performance. Any occasional problems highlighted in EQA scheme reports are often quickly resolved internally. However, EQA organizers will contact any laboratory that consistently fails to meet standards of acceptable performance, to ensure that the problem is being rectified and to offer help.

9.0 PT Provider or EQA body for Medical Laboratory

All the following organizations have been approved by external regulatory bodies such as Clinical Pathology Accreditation (CPA).²

i) **UK NEQAS** - UK National External Quality Assessment Schemes (Government)

ii) **WEQAS**- Welsh External Quality Assessment Schemes

iii) **RIQAS** - Randox International Quality Assessment Scheme (Private)

iv) **RCPA** - Royal college of Pathologists of Australasia (Private)



- v) **Bio-Rad EQAS**- Bio-Rad External Quality Assurance Services (Private)
- vi) **CAP**- College of American Pathologists (Government)
- vii) **EQAC**- External Quality Assessment in Clinical Chemistry in Thailand (Government)

Local representative of RIQAS and Bio-Rad EQAS are available in Bangladesh.

10.0 Conclusion:

EQA is a system for objectively checking the laboratory's performance using an external agency or facility. All laboratories should participate in an EQA process for all tests performed, whenever possible. Accredited laboratories are required to participate in EQA.

There are several methods for conducting EQA; traditional proficiency testing is available for many tests, is cost-effective, and provides useful information. When proficiency testing is not practical or does not provide enough information, other methods should be employed.

There must be no difference in the treatment of a proficiency testing sample and a patient sample. The normal testing methods must be followed and the procedure must involve personnel who routinely perform the testing.

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Are we ready to conduct Interlaboratory Comparison Program in Bangladesh?

Shajahan Siraj, Shamim Ahmed, Ahedul Akbar, Aminul Ahsan, M Azizul Islam Kazi

Introduction

We often discuss the importance of proficiency testing (PT) / Interlaboratory comparison (ILC) to demonstrate that the laboratory has been producing quality data continuously complying international standard. A PT test will enable a laboratory to evaluate the competency of the lab personnel or test method engaged in that laboratory. The accredited laboratory or the laboratory seeking accreditation is required to participate in PT program in certain frequencies based on scope of accreditation. There are several PT sample providers around the world e.g. Environmental Resource Associate (ERA), Canadian Association for Laboratory Accreditation (CALA), Advanced Analytical Solutions (AAS), GEMS water UNEP etc. who organize proficiency testing program throughout the year. However, laboratories in Bangladesh are encountering several problems while they participate in PT such as PT sample transportation from overseas, delay due to customs release etc. More importantly, the storage environment during transportation may compromise the stability and quality of the PT sample. It is also often discussed that foreign currency transaction for international payment for purchasing PT sample is not smooth. We may overcome the problems mentioned above and also save foreign currency if a local PT / ILC sample provider can alternatively be emerged in Bangladesh.

In this paper, we will explain the process how we voluntarily conducted several ILC programs in the past few years as a potential PT/ILC sample provider. We will also describe the way of statistical analysis used to compare the data among the testing laboratories in Bangladesh. The aim of this program was to evaluate the data quality of testing laboratories participated. In this program, we chose four water quality parameters including arsenic, iron, manganese and phosphate which are environmentally relevant to ground water in Bangladesh. In this paper, our discussion will be limited to and focused on arsenic only as an example. However, data analysis for other parameters resembled the analysis of arsenic. For reliability, we also compared the results received from local laboratories to an international accredited laboratory from Canada. In addition, we also included arsenator field test kit in this program as they are often used to analyse arsenic in the field level. Thus, it was also an opportunity to check if the field test kit results are comparable with that of sophisticated atomic absorption spectrometer.

Experimental Design & Sample Preparation

Reference Standard solutions of arsenic (1000 mg/L as As+5) were purchased from the Merck Company Germany. The experimental design was to use two aqueous standards at different concentrations. The stock standard (1000 mg/L as As+5) was diluted to make two different arsenic standard solutions. Similarly, two arsenic contaminated tube well water samples of different concentration were also included to take matrix effect into consideration during analysis. All standards and samples were preserved HNO₃ (pH <2). Note that we hold a number of samples randomly during preparation process to ensure homogeneity of the prepared sample. Another six samples (both standard and well water) were hold and tested every week until at least 4 weeks to check the stability. Calibrated pipettes and glassware were used to prepare/dilute the samples. Tube well water samples were collected from an arsenic affected area in Bangladesh by maintaining proper chain of custody. Twenty laboratories participated in the program where one of them was an accredited laboratory from Canada. In addition, ten field test kit (arsenator) participated and analysed the same sample in the field environment at different areas of Bangladesh.



MINITAB 14 software was used for all statistical analysis in this program.

To limit the discussion, we will only present the data analysis of tube well water samples and these samples are referred as A and B in the data analysis section.

Data Analysis and Evaluating Laboratory Performance

A reference value was first established for each sample as the median of the reported laboratory data. Means, medians and standard deviations of all the analyte for the different samples are presented in **Table 1**.

Arsenic ($\mu\text{g/L}$)	Sample A	Sample B	
Mean (X)	79.68	15.44	
Median (Med)	82.35	15.25	
Uncertainty (U)	16.36	2.61	

A Youden Two-Sample plot, shown in Figure 1, is a simple but effective graphical technique used for analysing interlaboratory data when each laboratory has carried out analysis on two test samples that are similar in nature but not necessarily a duplicate sample. We will call these samples A and B. It is most useful with samples of a similar matrix and with concentrations that vary by less than an order of magnitude.

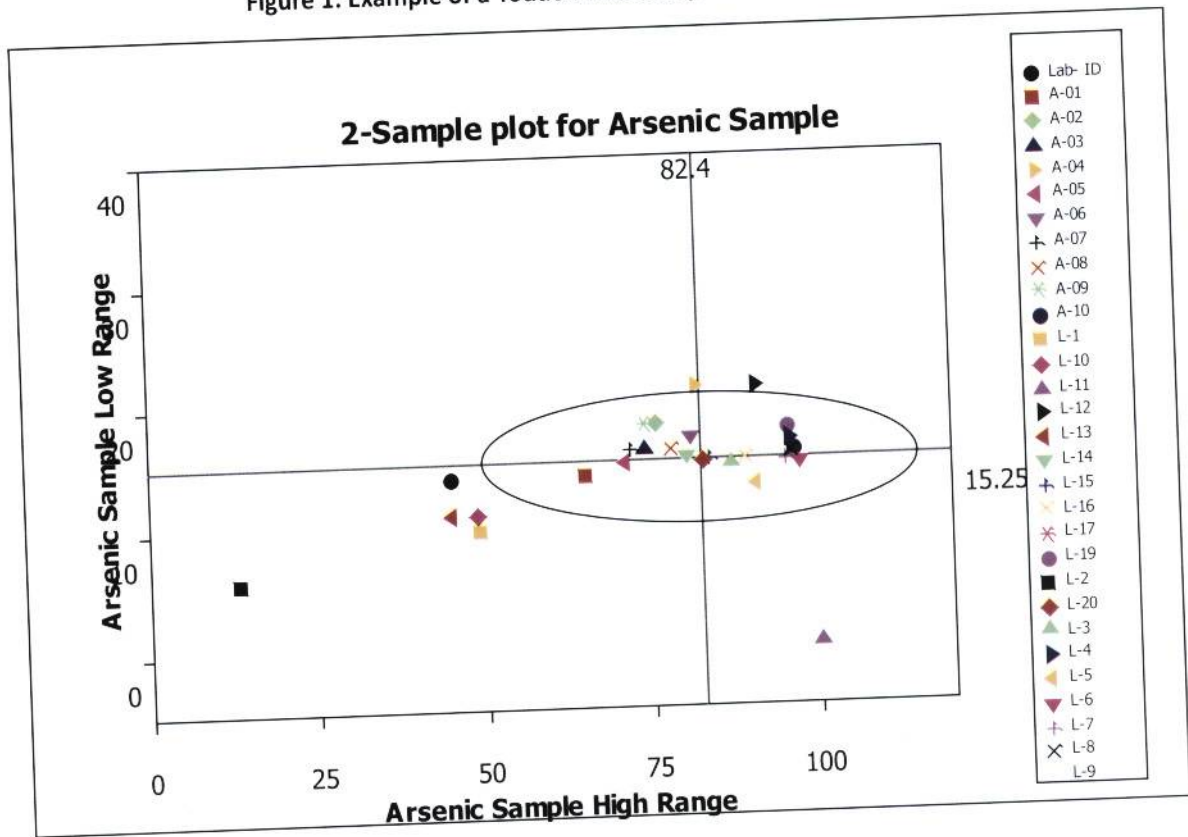
A Youden Two-Sample plot can be used to answer the following questions:

1. Are all labs equivalent
2. What labs have between-lab problems
3. What labs have within-lab problems
4. What labs appear to be outliers
5. What is the performance of the best labs

A Youden Two-Sample plot is formed by taking the paired data reported by each participating laboratory and plotting the value for sample A on the X axis against the value for sample B on the Y axis. Each pair of data gives rise to a single point on the plot to represent the performance of that particular laboratory. Data are plotted in this way for all paired data from all participating laboratories, with the individual laboratory codes identified by the legend. A-01 to A-10 and L-1 to L-20 indicates arsenators and testing laboratories respectively participated in this program.

The mean (X), median (Med), standard deviation (U) and the $\text{Med} \pm 2U$ for each sample is determined. Outliers can be removed from calculations if necessary from data sets that contain a sufficient number of participating laboratories and if results greater than 3 or 4 standard deviations from the mean are encountered. The median is a more robust statistic than the mean since the median is less sensitive to outliers than the mean. Outliers are plotted even if removed from calculations.

Figure 1: Example of a Youden Two-Sample Plot



The straight crossed lines divide the graph into four quadrants. A vertical reference line is drawn at the median determined for sample A so that half the data lie to the left of the line and half the data lie to the right. A horizontal reference line is drawn at the median determined for sample B so that half the data lie above the line and half the data lie below the line.

An ellipse is drawn such that the top and bottom of the ellipse are at the sample A Med \pm 2U the left and right edges of the ellipse are at the sample B Med \pm 2U. The ellipse approximates a 95 % joint confidence interval for samples A and B.

A Youden Two-Sample plot is used to show systematic errors as well as random errors. If the results from the laboratories vary entirely because of random errors, the results will fall randomly around the intersection of the median reference lines and approximately equal number of points will be expected to fall in each of the four quadrants. If systematic errors are the main cause of the variation, a predominance of points will be visible in the top right and the lower left quadrants of the plot. Laboratories that report high data on one sample will commonly report high on the other also. Laboratories that report low data on one sample will similarly report low on the other too. This is because much of the between-laboratory differences are systematic rather than random.

In **Figure 1**, the data for the low and high range arsenic sample, shows 29 reported data with 15 data above and below the median of 15.25 ppb arsenic for the low range sample and 15 data to the right and to the left of the median of 82.4 ppb arsenic for high range sample. Labs L - 20, L-10, L-11 and L-14 report data that are systematically low compared to the rest. Out of 29 points, none of the points plot in the upper right which indicates no higher systematic errors. Labs L - 12 reported data which indicate precision problem. A-01 reported results close to the median on the low range arsenic but quite low on the high range sample.



Data from all the other labs fall in the upper right or lower left quadrants showing that the differences are due to between lab biases since they reported data that were either high or low for both samples. Thus, we can rank the laboratory/field test kit according to data provided and suggest the present laboratory/field test kit data quality in the respective parameter. We suggest any laboratory/field test kit that reported data that is markedly different from the others and fall outside the ellipse should review their data and procedures to learn the reason for the differences.

Where we are now and what is next?

We have conducted seven ILC programs so far. By this, we have developed our technical knowledge and capacity to conduct similar program in future. In addition, as an ISO/IEC 17025:2005 accredited laboratory, we have already participated in several international PT programs that covers both inorganic and organic chemical testing parameters such as heavy metals, pesticides, polyaromatic hydrocarbons and other physical parameters in water matrix. Thus, we are already familiar with the process and different sample matrices relevant to chemical testing laboratories.

It was noted in the beginning of this paper that we also included other water quality parameters e.g. iron, manganese and phosphate in the ILC program conducted in last several years. However, we have only discussed arsenic results due to constraints in length of the paper. In future, we may include other heavy metals/parameters relevant to environmental pollution such as lead, chromium, cadmium, nitrite etc. in such an ILC program. Although, we have developed our expertise in preparing ILC sample for heavy metals in water, we should not be limited to inorganic parameters only. As pesticide and other organic contaminants in food is a common concern now a days in Bangladesh, it is crucial to develop the capability of local testing laboratories in organic contaminants analysis. In this aspect, ILC program on organic contaminants may be helpful for laboratories to demonstrate their competency in this area. By using the present expertise, we can extend our scope of work to this area. In future, we may seek accreditation as PT provider from the respective accreditation body. In this way, we may become a potential ILC sample provider in Bangladesh in near future.

Conclusions

In this paper, we have outlined how ILC program was conducted using local expertise. It has also been described how the laboratories can be ranked according to data produced them. These programs were able to suggest the laboratories if they were not competent enough to produce quality data. In this way, ILC programs were helpful for local laboratories in Bangladesh to judge their present data quality. Although we were not accredited as ILC sample provider we followed a systematic approach to make the program successful. Moreover, the program helped find out the laboratory shortcomings in the mentioned water quality parameters. The ILC programs we have conducted has encouraged us in engaging ourselves as a potential ILC sample provider in Bangladesh.

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How to improve color fastness to rubbing...

Debashis Saha



Failure of color fastness to rubbing is one of the most common problems in dyeing industry. Especially for deep black, maroon, navy blue color it is very difficult to achieve buyers rubbing fastness requirement particularly wet rubbing. It is possible to improve wet rubbing and get rid from this kind of difficulty by following some steps. To handle this problem first we need to know, what is color fastness and what is rubbing or crocking?

Colorfastness:

It is the property of colored material to resist changes in any of its color characteristic, to transfer of its colorants to adjacent materials, or both, as a result of the exposure of the material to any environment that might be encountered during the processing, testing, storage, or use of the material.

Rubbing:

The transfer of colorant from the surface of a colored material to an adjacent fabric, principally for the rubbing action is known as color fastness to rubbing, it is also known as colorfastness to crocking. This test is designed to determine the degree of color which may be transferred from the surface of a colored fabric to specific test cloth (adjacent fabric) for the action of rubbing. The rubbing fastness are tested by using an instrument called crock meter and it works on the principle of abrasion in two conditions; dry and wet, where crock meter creates the rubbing motion which is simulating the action of a human finger and forearm.

In case of dry rubbing, firstly the margin of the colored specimen get broken, as a result the loosely

or unfixed dye particles are removed and adhered to the surface fibres of the adjacent rubbing cloth.

In case of wet rubbing, unfixed dyes will dissolve in water and then it is transferred to the adjacent rubbing cloth. In wet crocking both color and the colored short fibres are transferred to the adjacent rubbing cloth this leads to poor wet rubbing fastness.

Rubbing Fastness depends on:

Fibre or yarn quality: It is better to use mature cotton fibres, if immature or dead cottons are used during spinning process, which go through several metallic parts then there is a chance of breaking immature fibres into short fibres. As well as during dyeing the dyes will not be properly fixed to the immature and dead fibres.

We all know that, carded yarn have more short fibres on the other combed yarn has less short fibres. During rubbing both colour and coloured short fibres are transferred to the crocking cloth so it is better to use combed yarn.

Fabric or yarn surface characteristics: Smooth surface definitely will give good rubbing fastness. If the fabric or yarn surface is rough then abrasion will be so there is a possibility of poor rubbing fastness. If there is any protruding fibre remains on yarn or fabric then there is chance to get poor rubbing result. So by sinzing or enzyme process we can remove protruding fibre. It is also found that mercerised cotton shows improved fastness to rubbing as after mercerizing cotton get a smooth shape.



Colorant Nature: Each dyestuff like reactive, direct, disperse, direct or pigment has its own fastness properties to rubbing. There are some colors like deep black, maroon, deep navy blue which have poor color fastness properties to rubbing because of their chemical structure; like black colorant is a carbon base color and the particle size of carbon is large than the other colors that's why its rubbing properties are poor. Dyestuff fixation is the major issue for rubbing. So we have to ensure proper dyeing process and proper fixation of dyestuff. To obtain good rubbing fastness, unfixed dyes need to be completely removed.

Dyeing Shade Percentage (%): Normally for the dark shade where shade percentage is more; there is an enough chance to get poor rubbing result as in dark shade amount of dyestuff is more so possibility to detachment of dyestuff from fibre is also more. On the other hand for light shade where shade percentage is less, so the amount of dyestuff is less as a result detachment of dyestuff from fibre will also be less.

To get excellent rubbing fastness, we have to consider above all parts in each step of textile processing. After following each step thereafter the result does not meet the expected result then we can try the following step for further improvement for cellulosic fibre which dyed with reactive dyes. For other dyestuffs we have to follow different process.

- Proper Pre-treatment & Dyeing process: Pre-treatment process helps to get better absorbency of the textile materials. Proper pre-treatment process will lead to better take of dyes. We also have to follow the supplier recommended dosing of salt and soda during dyeing as well as dyeing time & temperature.

- Intensive Washing-off: Washing after dyeing is very important. For better washing off we can follow the following steps.

- * Cold rinsing with water
- * Wash at 40 °C with 1-2 ml/l Acetic Acid (60%) to neutralize the dyes fibre.
- * Hot rinsing at 70 - 80°C for 10 minutes to remove hydrolyzed dye.
- * Hot wash at boiling temperature with efficient soaping agent for 15 minutes for complete removal of hydrolyzed dye.
- * Warm rinsing at 50 - 60°C for 10 minutes
- * Cold rinsing with water

It will remove almost all unfixed dyes. Unfixed dyes may cause the failure of the product so it is very important to ensure that there are no unfixed dyes on the final materials.

- Chemical Treatment: We can use fixing agent for better fixation of dyestuff it helps to improve the rubbing fastness slightly. But in market there are some rubbing fastness improver chemicals by using this rubbing fastness can be improved specially wet rubbing up to 1 and 1.5 grade. Following Pad (Pickup % 70 - 80%) - Dry - Curing method normally we can get better result of these types of chemical (Rubbing fastness improver - 30 - 40 gm/l). If rubbing fastness improver is used with fixing agent then the rubbing fastness result slightly decreased. By using some finishing agent that will create a formation of films coating on fabric or yarn which will behave similarly to lubricants in reducing the rubbing forces.

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Accreditation matters in delivering confidence on quality medicines

Md. Mahbubur Rahman



The pharmaceutical sector is one of the most dynamic, technologically developed and powerful sectors in Bangladesh. The government has declared pharmaceuticals as the "Thrust Sector". About 97% of the total medicinal requirement of the local market is met by the local pharmaceutical industries. Pharma market has grown from about \$25 million in 1982 to about \$2 billion today.

In Bangladesh total domestic healthcare expenditures are currently approximately three percent of GDP and pharmaceutical sectors contribute about one percent to total GDP. This provides a unique opportunity for domestic pharmaceutical sales in addition to exports. The factors stimulating a rise in demands are, but not limited to, increased education levels, enhanced awareness of healthcare, growing per capita incomes, the emergence of private healthcare services and the government's expanding public expenditures in this sector.

This sector also exports medicines to 100 countries of the world including Europe having great potential for expansion. Bangladesh like other LDCs are also enjoying patent protection by WTO exemption for an extended period until 2033 for manufacturing any patented medicines without prior permission from innovator.

Today across the world pharmaceutical sectors are highly regulated and need to strictly maintain highest quality standards. For maintaining its continuous improvement, pharmaceutical sectors of Bangladesh have to meet the ever changing demands of customers keeping patch with the advanced technology and implementing appropriate quality managements system in line with the standards. It is a

matter of great hope that at present some pharmaceutical industries have the state-of -art facilities and appropriate quality management systems to demonstrate competence of meeting the customers' expectations at home and abroad. Demonstration of this competence needs to be endorsed by a third party attestation for global recognition and acceptance.

In the present free economy, a prerequisite for trade on equal terms is that any product (including services), accepted formally in one economy, must also be free to circulate in other economies without having to undergo extensive re-testing, re-inspection, re-certification, etc. But in reality it does not happen always. Any economy can use domestic regulatory process as a means of protecting domestic producers which results in imposing bar(s), termed as Technical Barriers to Trade (TBT) on cross border trade.

Then the question is as to how to attest this competence and to remove this barrier. The answer is simply 'Accreditation'. For removing these trade barriers there should be some provisions for treating the results of different conformity assessment as "equivalent" (not equal) and arrangements for mutual acceptance of results. Accreditation, voluntary in nature, is a third party attestation for formal recognition of demonstrated competence to carry out specific conformity assessment tasks and a mechanism to establish Mutual/Multilateral Recognition Arrangements (MRA/MLA) for mutual acceptance of conformity assessment results. Thus accreditation facilitates international trade through removal of the technical barriers.



World Trade Organization recognizes accreditation as an appropriate mean for verifying compliance. In WTO-TBT it is cited "6.1.1 adequate and enduring technical competence of the relevant conformity assessment bodies in the exporting Member, so that confidence in the continued reliability of their conformity assessment results can exist; in this regard, verified compliance, for instance through accreditation, with relevant guides or recommendations issued by international standardizing bodies shall be taken into account as an indication of adequate technical competence;"¹

Considering health and safety issues many countries of the world made accreditation as requirements in their regulations. Drug Office, Department of Health, Hong Kong made accreditation a requirement for those laboratory providing contractual testing services to pharmaceutical industries. According to the guideline pharmaceutical manufacturers must use external accredited laboratories to ISO 17025, or equivalent, for conducting analytical and/or microbiological testing required.² World Health Organization's Prequalification scheme of pharmaceutical quality control laboratory also encourages accreditation to ISO/IEC 17025. WHO recommends laboratories aspiring to be prequalified to work towards getting accreditation and also considers accreditation in the prequalification process.³

Laboratory accreditation to ISO/IEC 17025 is getting popular with the days. As of 2015, 52,000 laboratories across the world are accredited by ILAC MRA signatories. ILAC sees 174% growth in laboratory accreditation from 2002 to 2015.⁴ Now accreditation has become a market factor in international trade. In early 2016, United Kingdom Accreditation Service (UKAS) carried out a customer survey to capture feedback on the value of UKAS accreditation. Respondents reported that market expectations are primary drivers for maintaining accreditation. 81% reported that their customers expect or require accredited services.⁵

At present there exists a good accreditation infrastructure in Bangladesh. Bangladesh Accreditation Board (BAB) was established bylaws to develop national

quality infrastructure and conclude mutual recognition arrangement with the international organization for mutual acceptance and recognition of conformity assessment results. In the meantime this board has accredited 47 testing laboratories including pharmaceutical testing. As a course of its international recognition BAB has signed MRA with the Asia Pacific Laboratory Accreditation Cooperation (APLAC) and the International Laboratory Accreditation Cooperation (ILAC) in 2015 for testing and calibration. BAB is peer evaluated by APLAC at least once in every four years for the fulfillments of MRA requirements.

Pharmaceutical is a booming sector for the economy of Bangladesh. This sector can take this opportunity for upgrading their testing facility at par international standards through accreditation. This approach helps pharmaceuticals to gain customers' confidence on test results of the medicines at home and abroad. On the other hand accreditation also eases and supports the works of the concern regulatory bodies to ensure supply of quality medicines and arrest influx of sub-standards and harmful medicines into the domestic market.

Reference

1. *WTO-Agreement on Technical Barriers to Trade, Article 6, Page 123*
2. *World Health Organization, WHO Technical Report Series, No. 961, 2011, Page 394*
3. *Guidance for Industry: Contract Testing Laboratories, Drug Office Department of Health, Hong Kong, page 3*
4. *International Laboratory Accreditation Cooperation (ILAC), www.ilac.org, Facts and Figures tab*
5. *The value of UKAS accreditation for organizations with stable scopes in established technical sectors Survey Report*

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How Accreditation can support in achieving SDGs

Md. Abu Abdullah



Accreditation is an attestation of the competence and impartiality of conformity assessment bodies to carry out specific conformity assessment tasks. These bodies include but are not limited to calibration laboratories, medical laboratories, testing laboratories, inspection bodies, providers of proficiency testing, producers of reference materials, and bodies that certify management systems, products and persons, or undertake verification and validation.

It is an impartial and objective process carried-out by third-parties, that offers the least duplicative, the most transparent, the most widely accepted, and the least discriminatory route for the formal recognition world-wide of credible and trustworthy conformity assessment results.

Accreditation can support in achieving 17 Sustainable Development Goals (SDGs) with 169 associated targets constitute the core of the Agenda for Sustainable Development. These provide a new development framework that seeks to transform the world and guide all global, regional and national development endeavors for the next 15 years.

GOOD HEALTH AND WELL BEING: Health is a crucially important social and economic asset and a cornerstone for human development. Whilst the provision of universal health coverage remains a major global challenge, the use of accreditation within the health and social care sector can help drive up the quality and consistency of services provided.

Medical laboratory services are essential in the diagnosis and assessment of the health of patients, and encompass arrangements for requisition, patient preparation, and patient identification, collection of samples, transportation, storage, processing and examination of clinical samples, together with subsequent result validation, interpretation, reporting and advice. Results need to be accurate, timely, linked to the correct patient and processed with respect for ethics, confidentiality and the safety of the patient. Accreditation to the internationally recognized standard ISO 15189 enables laboratories to demonstrate their competence to deliver these services reliably.

Also Point of Care Testing - where testing is carried out outside the controlled and regulated environment of a medical laboratory, to enable patients to still be able to trust the results. Reference material producers - to demonstrate that they are competent to produce necessary reference materials (such as blood, urine or serum), allowing laboratories to verify their ability to measure accurately.

Medical reference measurement laboratories to enable the accuracy and traceability of some measurements in medical laboratories to be demonstrated. Accredited certification to ISO 9001 for organizations that provide of health and social care services to demonstrate continuous support to quality. Accreditation of inspection bodies inspecting health related services. Medical devices



under accredited certification to the international standard ISO 13485 demonstrating manufacturers address regulations and have commitment to safety and quality.

SAFE FOOD AND CLEAN DRINKING WATER:

Food and water safety is an essential part of everyday life. Accreditation provides assurance that consumers, suppliers, purchasers and specifiers can have confidence in the quality and safety of goods and in the provision of services throughout the supply chain. Samples, products, services, management systems or personnel can be evaluated against specified requirements by accredited laboratories, certification bodies, and inspection bodies to check that products are fit and safe for consumption.

Food and water testing for a wide range of chemical and microbiological scopes, packaging and environmental testing, sensory analysis, plant health and veterinary microbiology. Certification schemes ensure food and water suppliers throughout a supply chain comply with agreed requirements, such as those for food safety management systems farm assurance schemes, products certification, food labeling, organic certification and Hazard Analysis & Critical Control Point (HACCP).

Inspection of operators throughout the supply chain for the provision of safe food and clean drinking water, including the inspection of pre-shipment, plant health, meat and slaughterhouses and hotels. Proficiency testing schemes, for example for contamination or authenticity. Reference material producers for a number of materials including drinks, foodstuffs, animal feed, herbal medicines and water.

ACCREDITATION IN INDUSTRY AND MANUFACTURING:

Industrialization is one of the main drivers of sustained economic growth and sustainable development. Industry is also the most dynamic driver of prosperity and collective wellbeing.

Industrial development is therefore a key objective intrinsically woven into the architecture of the SDG's 2030 Agenda. Manufacturers need to ensure products are of consistent high quality, comply with regulations and standards, and meet specification. Accreditation enables consumers, suppliers, purchasers and regulators to have confidence that products placed on the market are safe and meet the manufacturers claims made about them.

Testing of food products, plastics, fuels and oils, detergents, paints and coatings, toys and consumer goods, textiles, glass, cosmetics, construction products, and electronic goods. Calibration and dimensional testing to ensure accurate measurement. Safety testing of products including children's cots and components, toys and their packaging, prams, bicycles, sport equipment. Textiles, leather goods, ceramic and glass wear, and articles intended for use with food. Chemical analysis and determination of physical parameters to ensure safe use of chemicals. Inspection throughout the manufacturing supply chain including design and manufacturing inspection of items of equipment, production capability assessment, the construction of pressure systems, storage vessels and tanks, process plant and systems, and the carriage of dangerous goods by rail or road. Certification in a range of areas that provide supply-chain confidence for those operating in the manufacturing sector. Accreditation supports governments and organizations in the process of enhancing the performance of energy efficiencies and improving economic performance, whilst reducing consumption of resource and emissions and preventing unsafe, unhealthy or environmentally harmful products from entering the market place.

ENHANCING THE USE OF ENERGY: The application of energy-efficient production processes and technologies, along with enhanced utilization of renewable energy sources which will



provide an opportunity for countries to follow a low-carbon and low-emissions growth path, powered by innovative, smart and locally relevant energy solutions, is a challenging aspiration for the future.

The provision of energy involves complex supply chains and processes, often involving cross-border trade and the transportation of volatile substances. The commercial development of alternative renewable sources of energy needs to be environmentally-friendly, and demonstrate value in terms of cost, reliability, durability and performance.

Testing of gas, fuels and oils in order to ensure that they meet their intended purpose, including testing for sulphur content, correct additives in the right concentrations, or the presence of bacterial contaminants or fuel degradation levels. Testing new technologies such as tidal and wind energy. Testing products such as wind turbines and solar panels to measure performance, durability, safety, and environmentally-friendly considerations. Safety inspections of energy-related installations, including petro chemical, solar energy, marine and wind farms, energy efficient lighting, smart infrastructures, nuclear installations, and coal-fired power stations. Certification of energy management systems to help businesses improve energy-related performance and identify energy opportunities.

HEALTH AND SAFETY IN THE WORKPLACE:

Health and safety are well recognized as having an impact on sustainable development - from eradicating poverty through job creation, sustainable livelihoods, technology and skills development, food security and equitable growth; to ensuring sustainable consumption and production through dealing with environmental concerns related to health and safety in the workplace.

Businesses face increasing social, commercial and regulatory pressures to assess and control hazards

and risks from their operations. Accreditation ensures that employees, purchasers and regulators can have confidence in the provision of services that have an impact on health and safety.

Testing including occupational hygiene, asbestos fibers and air monitoring, identification of legionella bacteria, land and air pollutants, and electrical safety. Certification of Occupational Health and Safety Management systems or other management systems and inspection to support the management of effective health and safety.

WASTE MANAGEMENT AND RE-CYCLING:

A sustainable environment for communities in the future needs cleaner energy, reduced pollution, and more effective chemical and waste management solutions to benefit from increased industrialization while safeguarding people and the environment. Accredited testing, certification and inspection provide assurance that waste management and recycling are being managed effectively.

Testing of materials such as recycled oil, waste water, or contaminated land and soil being re-used for building development. Proficiency testing providers for a range of environmentally related activities including drinking waters, industrial waste water, effluent, agricultural soils and sediment. Reference material producers for a number of materials including waters, soils, sediments, fuel and their by-products. Inspection of activities that have an environmental impact including the manufacture of paper, wood containers. Glass, bricks, ceramic tiles, coke and refined petroleum, and re-cycling. Certification of Environmental Management Systems and Energy Management Systems. Quality Management System certification also provides a foundation for consistency of procedures across business in accordance with specific national or regional waste management regulations.



ACCREDITATION OF CERTIFICATION BODIES:

Third party certification of management systems is a frequently specified requirement to operate in the global market place. It can demonstrate compliance to a standard, a code of practice or regulatory requirements, and is frequently used in most areas covered by the Sustainable Development Goals (SDGs). Accreditation of certification bodies against the international standard ISO/IEC 17021 provides an independent evaluation of their impartiality, competence and consistency.

Quality Management System (ISO 9001)
Information Security Management (ISO/IEC 27001)
Environmental Management (ISO 14001) IT Service Management (ISO 20000) Food Safety Management (ISO 22000) Supply Chain Security Management (ISO 28000) Business Continuity Management (ISO 22301) Health and Safety Management (OHSAS 18001) Information Technology Service Management (ISO/IEC 20000-1) Supply Chain Security Management (ISO 28000) Energy Management (ISO 50001) Asset Management (ISO 55001).

Accreditation may also be applied to certification used to provide third party assurance that a particular product meets the specified requirements of a products standard (ISO/IEC 17065) or that persons meet the requirements of a

particular personnel certification scheme (ISO/IEC 17024). More recently, greenhouse gas validation and verification bodies have also been accredited (ISO 14065).

ACCREDITATION OF INSPECTION BODIES:

Inspection, which is the examination of a product design, product, service, process or installation to determine conformity with general or specified requirements, is an essential part of ensuring the operational safety of many items that the public use in their daily lives. Examples of activities which benefit from accreditation include inspection of boilers and pressure equipment used in the workplace, cranes and passenger ropeways, offshore structures for oil and gas exploration and production, mechanical equipment, as well as non-destructive testing, inspection of meat, dairy products and other food production, bio-security and border control inspections. Accreditation bodies use the criteria of the internationally accepted standard ISO/IEC 17020 to assess factors relevant to an inspection body's ability to produce consistently reliable and impartial inspection results.

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List of BAB Accredited Conformity Assessment Bodies (CABs)

Sl. no	Name of the CAB	Field/status
Testing Laboratory (ISO/IEC 17025:2005)		
1.	Institute of National Analytical Research Services (INARS), BCSIR ,Dhaka	Withdrawn
2.	SGS Bangladesh Limited, Dhaka	Textile Testing
3.	AAA Corporation-Laboratory-01, Gazipur	Chemical Testing
4.	Interstoff Apparels Ltd. Laboratory(IALL), Gazipur	Textile Testing
5.	Fish Inspection and Quality Control (FIQC) Laboratory, Savar, Dhaka	Food Testing
6.	Textile Testing Services Ltd., Gazipur	Textile Testing
7.	Testing Laboratory, Dysin International Ltd., Dhaka	Textile Testing
8.	ITS Labtest Bangladesh Ltd., Tejgaon I/A, Dhaka	Textile Testing
9.	Concrete Innovation and Application Centre (CIAC), Holcim Cement (Bangladesh) Ltd., Dhaka	Mech. test of Aggregate and Concrete
10.	Lub-rref (Bangladesh) Ltd. Chittagong	Petroleum Products Testing
11.	Bureau Veritas Consumer Products Services (Bangladesh) Ltd., Savar, Dhaka	Textile Testing
12.	Nestle Sreepur QA Laboratory, Gazipur	Food Testing
13.	Fish Inspection and Quality Control (FIQC) Laboratory, Chittagong	Food Testing
14.	Fish Inspection and Quality Control (FIQC) Laboratory, Khulna	Food Testing
15.	Modern Testing Services (Bangladesh) Ltd., Savar, Dhaka	Textile Testing
16.	Bureau Veritas Consumer Products Services (Chittagong) Ltd.	Voluntary suspension
17.	ITS Labtest Bangladesh Ltd., Chittagong	Textile Testing
18.	Analytical Chemistry Laboratory, Atomic Energy Centre, Dhaka	Chemical Testing
19.	Central laboratory, Divine Fabrics Ltd., Gazipur	Textile Testing
20.	Petromax Refinery Ltd. Khulna	Petroleum Products Testing
21.	Central Laboratory, Samuda Chemical Complex Limited, Munshiganj	Chemical Testing
22.	TÜV SÜD Bangladesh (Pvt.) Ltd., Dhaka	Textile Testing
23.	Bangladesh Material Testing Laboratory Ltd., Dhaka	Construction Material Testing
24.	Quality Control Laboratory, Julphar Bangladesh Ltd., Gazipur	Pharmaceutical Testing
25.	NUSDAT-UTS, Walton Hi-Tech Industries Ltd., Gazipur	Electrical Testing
26.	PRAN Beverage Laboratory, PRAN Dairy Limited, Narshingdi	Food Testing
27.	Fakir Testing Services Ltd., Narayanganj	Textile Testing
28.	TAHA GIYIM Lab Bangladesh, Dhaka	Textile Testing
29.	SGS Food & Agricultural Testing Laboratory, Dhaka	Food Testing
30.	UL VS Bangladesh Ltd., Dhaka	Textile Testing



Sl. no	Name of the CAB	Field/status
31.	Plasma Plus Application and Research Laboratory, Dhaka	Textile, Food, Pharmaceuticals and Environmental testing
32.	Brachi Testing Service (BD) Ltd., Dhaka	Textile Testing
33.	Amber Textile Services Ltd. , Gazipur	Textile Testing
34.	SGS Bangladesh Limited, Chittagong	Textile Testing
35.	TÜV Rheinland Bangladesh PVT. Ltd., Dhaka	Textile Testing
36.	Quality Control Laboratory (Central Laboratory), Renata Limited, Mirpur, Dhaka	Pharmaceutical Testing
37.	Quality Control Laboratory (Potent Product Facility), Renata Limited, Mirpur, Dhaka	Pharmaceutical Testing
38.	Pesticide Analytical Laboratory (PAL), BARI, Gazipur	Chemical Testing
39.	GMS Testing Laboratory, Gazipur	Textile Testing
40.	Testing Laboratory, Impess-Newtex Composite Textiles Limited, Tangail	Textile Testing
41.	Testing Laboratory, Qtex Solutions Limited, Dhaka	Chemical Testing
Calibration Laboratory(ISO/IEC 17025:2005)		
42.	National Metrology Laboratory (NML-BSTI), Dhaka	Calibration (Length, Temperature, Mass, Volume, Pressure, Time and Frequency)
43.	Training Institute for Chemical Industries(TICI), Narshindi	Mechanical
44.	Calibration Laboratory, Dysin International Ltd., Dhaka	Mechanical
45.	OTS (Pvt.) Ltd., Dhaka	Mechanical
46.	Instrumentation Engineering Services Ltd., Dhaka	Mechanical
Medical Testing Laboratory (ISO 15189:2012)		
47.	United Hospital, Pathology Laboratory, Gulshan, Dhaka	Pathological Testing
Certification Body (ISO/IEC 17021:2011)		
48.	BSTI, Management System Certification Wing, Dhaka	Management System Certification
49.	United Certification Services Limited, Dhaka	Management System Certification
Inspection Body (ISO/IEC 17020:2012)		
50.	Qtex Solutions Limited, Dhaka	Workplace Environment
51.	Envirotech International Ltd. Dhaka	Environmental Inspection



World Standards Day 14 October 2017

Standards make cities smarter

Each year on 14 October, the members of the IEC, ISO and ITU celebrate World Standards Day, which is a means of paying tribute to the collaborative efforts of the thousands of experts worldwide who develop the voluntary technical agreements that are published as international standards.



Dr. Junji Nomura
IEC President



Zhang Xiaogang
ISO President



Houlin Zhao
ITU Secretary-General

Sufficient fresh water; universal access to cleaner energy; the ability to travel efficiently from one point to another; a sense of safety and security: these are the kinds of promises modern cities must fulfil if they are to stay competitive and provide a decent quality of life to their citizens. Building a Smart City is highly complex. Every city faces its own challenges and requires its own mix of solutions. However, there is one common denominator that greatly simplifies this task.

International Standards support the development of tailor-made solutions that can be adapted to the particular circumstances of a given city. They contain expert knowledge and best practices, and are essential enablers in ensuring quality and performance of products and services. In addition, they drive compatibility between technologies and help users to compare and choose the best solution available.

Standards also open the door to a larger choice of products and services. They help increase competition and foster innovation. In a systems approach they enable the integration of structures or solutions from different suppliers.

International Standards make things work safely and smoothly together at every level in cities. They provide the foundation for electricity access and all the many devices and systems that use electricity and contain electronics. They support the information and communication technologies that enable data collection, exchange and analysis, and information security. Last but not least they provide important guidance for all aspects of city life, including energy-efficient buildings, intelligent transportation, improved waste management, building sustainable communities and much, much more.

With Standards, we can make our cities smarter, step by step. Individual islands of smartness can grow together and interconnect.

It is comforting to know that International Standards will support smooth and integrated Smart City development.

